Operation, Maintenance, and Monitoring Plan for Engineering and Institutional Controls for

Ventron/Velsicol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

(USEPA No. NJD980529879)

July 2011

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List of Acronyms and Abbreviations

CEA Classification Exception Area

HASP Health and Safety Plan LURP Land Use Regulation Permit N.J.A.C. New Jersey Administrative Code

NJDEP New Jersey Department of Environmental Protection

ng/m³ nanograms per cubic meter

OM&M Operation Maintenance and Monitoring

OSHA Occupational Safety and Health Administration

OU-1 Operable Unit 1

QAPP Quality Assurance Project Plan

RDCSCC Residential Direct Contact Soil Cleanup Criteria
RDCSRS Residential Direct Contact Soil Remediation Standard

ROD Record of Decision SSO Site Safety Officer

TRSR Technical Requirements for Site Remediation USEPA United States Environmental Protection Agency

Section 1 – Introduction

The Operation, Maintenance, and Monitoring (OM&M) Plan for Engineering and Institutional Controls at the Ventron/Velsicol Superfund Site Operable Unit 1 (OU-1) ("Site") located in Wood-Ridge and Carlstadt, New Jersey was prepared on behalf of Morton International, Inc. (Rohm and Haas Chemicals, LLC is a successor-in-interest to certain liabilities of Morton, (hereinafter, collectively "Morton") with the assistance of ENVIRON International Corporation (ENVIRON), the environmental consultant for the Custodial Trust. The Custodial Trust is a trust established pursuant to an order entered on August 9, 2002 by United States Bankruptcy Court approving the formation of the Custodial Trust and Settlement Agreement in the United States Bankruptcy Court for the District of Delaware, *In Re Fruit of the Loom, Inc. (No. 99-4497)*.. The remainder of this section provides an overview discussion of the following:

- Compliance and reference documents;
- Site background;
- Parties responsible for reporting;
- Reporting and certification frequency; and
- Report organization.

The purpose of this document is to outline the overall plan for future OM&M activities and describe the items that need to be completed for the monitoring and maintenance of engineering and institutional controls. Biennial certification is necessary to maintain the protectiveness of engineering and institutional controls. The monitoring, maintenance, and certification requirements pursuant to New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation (TRSR), New Jersey Administrative Code (N.J.A.C.) 7:26E are outlined below and summarized in **Tables 1 and 2**.

1.1 Compliance and Reference Documents

The OM&M Plan was prepared in accordance with the requirements of NJDEP TRSR, specifically N.J.A.C. 7:26E-6.2(a)18.

1.2 Site Background

The Site is divided into three areas consisting of a "developed" area, an "undeveloped" area, and an "off-site" area. The Site is located in the boroughs of Wood-Ridge and Carlstadt, Bergen County, New Jersey, as shown in **Figure 3**.

The developed area is approximately seven acres in size and is in the northwest portion of the Site. Two active warehouses, referred to as the Wolf Warehouse and the U.S. Life (Jerbil) Warehouse, are located on this portion. The former mercury processing facility was located on the area of the Site now occupied by these warehouses.

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The undeveloped area is approximately 19 acres of land that was filled but not developed and is located generally southeast of the developed portion of the Site. This portion of the Site is bordered to the north by a Norfolk Southern railroad track, to the south by Diamond Shamrock/Henkel Ditch (north), and to the east by Berry's Creek.

The off-site portion consists of the following properties: the Blum, Prince Packing, EJB, Lin-Mor, Ethel Boulevard and the Norfolk Southern railroad. The Borough of Wood-Ridge owns Ethel Boulevard and Norfolk Southern owns the railroad property.

Engineering and institutional controls were established at the Site and are described in the following reports:

- The Ground Water Classification Exception Area (CEA) Report submitted April 6, 2007 with addendum 1 issued November 20, 2007
- The Undeveloped Area RAW approved July 3, 2008 and
- The Developed Area RAW approved October 6, 2009

Institutional controls include the following:

- Deed notices; and
- Ground Water Classification Exception Area.

Engineering controls include the following:

- Air quality monitoring in the Wolf Warehouse;
- Contaminant flux monitoring in the undeveloped area;
- Maintenance of Site caps in the developed area;
- Site cap in the undeveloped area;
- Vertical barrier wall around the Wolf Warehouse;
- West Ditch cover system;
- Storm water controls; and
- The 55-foot buffer zone.

The operation and maintenance of these controls is described in detail in **Section 2**, below.

1.3 Personnel

The activities described in this OM&M Plan will be implemented by an OM&M contractor procured by Morton, unless otherwise indicated. OM&M team personnel will include an OM&M Manager, an Engineer, a Site Safety Officer (SSO), and field personnel. Morton may decide that multiple positions can be filled by one individual, provided the responsibilities are met. Prior to the OM&M services procurement, the following personnel will serve as site contacts:

• Site Contact for Morton International – Robert Casselberry;

- OM&M Manager Chris Greene;
- OM&M Manager (ground water sampling) Paul Feschbach-Meriney;
- Engineer Robert Swabsin, PE; and
- Site Safety Officer/Field Team Lead Jennifer Ferrara.

Regarding OM&M activities, the following responsibilities and qualifications are required to fulfill each position listed below.

OM&M Manager

The OM&M Manager shall be responsible for the following activities:

- Coordination of the schedules of the OM&M team in order to complete the required activities;
- Documentation and reporting of results from inspections, maintenance, operation, and monitoring; and
- Communication with Morton and the regulatory agencies, as required.

Engineer

The Engineer shall be a professional engineer licensed in New Jersey and shall be responsible for evaluation of the following activities:

- Storm water control features, if damaged or incapable of conveying storm flows, and review and approval of repairs, replacements, or modifications;
- Areas of persistent erosion on the undeveloped area cap or associated features and review and approval of repairs;
- Subsidence or settling on the developed and undeveloped area caps, and review and approval of repairs; and
- Disturbances or damage to vertical barrier wall.

Site Safety Officer

The SSO must have knowledge and experience with health and safety issues. The SSO has the following responsibilities;

- Review and implementation of the site-specific Health and Safety Plan (HASP);
- Conducting health and safety training for field personnel prior to work on the site; and
- Conducting periodic health and safety audits on site to evaluate compliance with the site-specific HASP.

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Field Personnel

Field personnel will be responsible for the tasks assigned to them. Personnel, including the OM&M Manager and SSO, must have the following to participate in OM&M activities at the Site:

- Occupational Safety and Health Administration (OSHA) 40-hour hazardous waste site worker training certification (29 CFR 1910.120) and OSHA 8-hour refresher training certification, if required to remain updated;
- An updated medical surveillance exam (as necessary);
- An updated certification in CPR and First-Aid (as necessary);
- Knowledge of the site-specific HASP. Training will be conducted by the SSO designated by Morton; and
- Knowledge of this OM&M Plan and specific task procedures in which the individual is participating. Training will be conducted by the OM&M Manager designated by Morton.

1.4 Reporting and Certification Frequency

A monitoring report documenting the performance of the inspections, ground water monitoring, and air monitoring described in this plan will be prepared and submitted annually to USEPA and NJDEP.

Pursuant to N.J.A.C. 7:26E-8.4(c) a biennial (every two years) certification report will be submitted covering engineering and institutional controls. The first certification will be submitted two years from the submission of the Remedial Action Report, which was submitted, to USEPA and NJDEP on April 15, 2011. The certification report will be combined with that year's annual monitoring report

The schedule for the submission of the annual monitoring report and biennial certification is presented in **Figure 1**.

1.5 OM&M Plan Organization

The OM&M Plan is organized into sections as follows:

- Section 1 Introduction;
- Section 2 Maintenance Items;
- Section 3 Documentation; and
- Section 4 References.

Section 2 – Maintenance Items

2.1 Deed Notice

The establishment of deed notices was stipulated in the Record of Decision (ROD) for properties where soil contaminated above the NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC) was to remain in place. Deed notices are established on the following properties:

- Wolf Warehouse:
- U.S. Life Warehouse (Reddy Raw);
- Undeveloped Area;
- Prince Packing;
- Blum;
- EJB:
- Ethel Boulevard; and
- Norfolk Southern Railroad.

The frequency of deed notice inspections, monitoring, and reporting is provided in **Table 1 and Appendix F**.

2.1.1 Required Monitoring

Pursuant to N.J.A.C. 7.26E-8.5 the following actions must be taken by the responsible party named in Section 1.3 to monitor the protectiveness of the remedial action, in regard specifically to the deed notices:

- Monitor pending and actual zoning and land-use changes;
- Conduct periodic inspections;
- Compare applicable New Jersey laws; and
- Maintain a log of maintenance actions.

Deed notice inspection forms are provided in **Appendix B**. These forms will be completed at the time of inspection and included in the annual report and biennial certification.

2.1.2 Deed Notice Reporting

A monitoring report will be prepared and submitted with each annual report and biennial certification. The reporting date and frequency are described in Section 1.4, above. The report will include applicable items as described in N.J.A.C. 7:26E-8.5(b).

2.1.3 Deed Notice Certifications

Biennial certifications will be prepared and submitted to the NJDEP. One report will be submitted covering engineering and institutional controls at the Site, as described in Section 1.4, above. Certifications will be prepared in accordance with N.J.A.C. 7:26E-8.5(c).

2.1.4 Deed Notice Requirements in Case of Change in Responsible Party

If the responsible party having the obligation to comply with N.J.A.C. 7:26E-8.5 changes, the following actions shall be taken:

- The person relinquishing the obligation shall notify the NJDEP of the name, address, and telephone number of the person assuming responsibility, as well as the effective date of the change;
- The person who is assuming the responsibility shall submit a letter signed and certified pursuant to N.J.A.C. 7:26E-1.5 stating that he/she is assuming responsibility for certification; and
- The letters required above will be submitted to the NJDEP within 30 days of the effective date of the change.

2.2 Classification Exception Area

A CEA Report dated April 6, 2007 was submitted to the NJDEP, and an addendum to the CEA report was issued on November 20, 2007. The actions required to ensure the protectiveness of the CEA, pursuant to N.J.A.C. 7:26E-8.6, are summarized below.

The frequency of CEA inspections, sampling, and reporting is provided in **Table 1**.

2.2.1 Required Monitoring

Ground water monitoring for the CEA will be conducted on a biannual basis. The schedule for monitoring is presented in **Appendix F**. Additionally, the following actions must be taken by the responsible party named in Section 1.3, pursuant to N.J.A.C. 7.26E-8.6, to monitor the protectiveness of the remedial action. Specifically, the following actions must be performed:

- Compare applicable New Jersey laws;
- Review 25-year water use planning horizon;
- Identify changes in actual ground water use inside CEA;
- Inspect ground water monitoring wells and piezometers;
- Report land use disturbance;
- Review CEA protectiveness and contaminant fate; and
- Assess ground water quality.

Ground water quality data collected during biannual CEA sampling will be validated in accordance with Section 4.8.4 of the attached Quality Assurance Project Plan (QAPP, **Appendix C**).

2.2.2 CEA Reporting and Certification

A monitoring report will be prepared and submitted for the ground water CEA with each annual report and biennial certification. The reporting date and frequency are described in Section 1.4, above. The report will include applicable items as described in N.J.A.C. 7:26E-8.6(b) and (c).

2.3 Air Quality Monitoring in the Wolf Warehouse

Air monitoring for mercury in the Wolf Warehouse is one of the components of the selected remedy "Soil Alternative 4" (S4), as presented in the ROD. Indoor air quality will be monitored for total atmospheric mercury as discussed in Section 5.1 of the Undeveloped Area RAW. An outline of the monitoring schedule is included below.

The frequency of air quality inspections, sampling and reporting is provided in **Table 1 and Appendix F**.

2.3.1 Required Monitoring

Inspection Frequency

The indoor air monitoring for mercury will be performed once a year during the summer season. The first round of testing was completed in September 2008. After the first year of sampling, the program will continue on an annual basis in accordance with Section 5.1 of the Undeveloped Area RAW (i.e., one set of indoor air samples will be collected every year).

Monitoring Procedures

The target compound for the indoor air sampling program is total atmospheric mercury consisting of gas-phase and particulate concentrations. The measured mercury concentrations will be compared to the New Jersey Indoor Air Screening Level value for mercury, which is 300 nanograms per cubic meter (ng/m³) for gas-phase mercury.

The proposed mercury sampling methodology is the *Frontier Geosciences Sorbent Total Mercury Method – Total Gaseous Mercury Capture on Iodated Carbon (FGS-009)*. This is a peer-reviewed method developed by Frontier Geosciences, Inc., an analytical laboratory that specializes in low-level mercury analysis. This method was used in previous sampling for mercury in and around the Wolf Warehouse and is described in Section 5.1.2 of the Undeveloped Area RAW. Sample collection methodology is presented herein.

The indoor air monitoring program was designed to collect multiple samples during each scheduled event and include collection of two indoor samples and one outdoor (upwind) sample of total atmospheric mercury. The number of samples per event and collection locations were established in accordance with the *NJDEP Vapor Intrusion Guidance* after an initial building survey at the Wolf Warehouse.

Sampling will be conducted over an approximately 24-hour period. The samples during a single event will be collected approximately concurrently (i.e., within +/- 30 minutes of each other). Each event will consist of six (6) samples (four indoor, with one outdoor and one blank as control samples). Samples will be collected in the breathing zone approximately five feet above ground/floor surfaces.

Meteorological data and weather forecast information will be obtained prior to (i.e., the day before) and the morning of a sampling event to determine the location for upwind ambient air sampling. Concurrent meteorological data for the 24-hour sampling period will also be obtained for aid in interpretation of sampling results. The closest local source of representative meteorological data is the nearby Teterboro Airport.

2.3.2 Air Quality Reporting

A monitoring report will be prepared and submitted with each annual report and biennial certification until the five-year review, at which time the future of the air quality program will be revaluated. The reporting date and frequency are described in Section 1.4, above. The report will include applicable items as described in N.J.A.C. 7:26E-8.7(b) and (c).

2.4 Contaminant Flux Monitoring

To provide for a remedy that is protective of surface water, monitoring of contaminant flux from ground water to surface water and sediment will be performed. The approach for ground water flux monitoring was proposed in Section 5.2 of the Developed Area RAW. Monitoring is described below.

The frequency of flux monitoring, sampling and reporting is provided in **Table 1**.

2.4.1 Required Monitoring

The first phase of contaminant flux monitoring will be the collection and analysis of ground water samples from on-site wells. The monitoring wells used for the flux monitoring will be sampled biannually (two times per year), which is the frequency described in the CEA report. The sampling and water level measurements will be performed as part of the periodic monitoring of the CEA.

Synoptic water-level measurements will be obtained from the 12 wells (CF-MW-1 through CF-MW-12) and 4 piezometers (CF-PZ-1 through CF-PZ-4) on-Site.

Ground water samples will be collected from 16 wells installed along the downgradient perimeter of the Site (CF-MW-1 through CF-MW-12 near Berry's Creek and Diamond Shamrock/Henkel Ditch (north). The samples will be collected using low-flow purge and sample collection methods (i.e., *NJDEP Low-Flow Purging and Sampling Guidance*) and methods provided in the NJDEP *Field Sampling Procedures Manual* (August 2005), and analyzed for mercury, arsenic, and benzene. Contaminant flux ground water quality data will be validated in accordance with Section 4.8.4 of **Appendix C**.

The approach to calculate the solute flux rate of contaminants of concern specified in the ROD (mercury, arsenic and benzene) by multiplying the solute concentration of water passing through a defined cross-section by the water flux rate passing through that same cross-section. The fluxes will be evaluated in 10 segments centered on the 10 proposed perimeter monitoring wells (CF-MW-2 through CF-MW-11) along Berry's Creek and Diamond Shamrock/Henkel Ditch (North). Ground water flow rates will be evaluated for each segment of the cross-section. Ground water solute concentrations will be defined by laboratory measurements of samples from the 10 wells used to define the cross-sections (CF-MW-2 through CF-MW-11). [This approach is similar to the method used to evaluate flux rates of inorganics in the Feasibility Study Report, pages 4-28 and 4-29.].

2.4.2 Flux Reporting

The results of the flux monitoring will be submitted for the contaminant flux monitoring program with each annual report and biennial certification. The reporting date and frequency are described in **Section 1.4**, above. The report will include applicable items as described in N.J.A.C. 7:26E-8.7(b) and (c).

The scope of (and need for) additional phase(s) of investigation of contaminant flux and protection of surface water will be discussed with the regulatory agencies prior to or during the first CERCLA five-year statutory review for the Site, which will be submitted to the NJDEP five years from the start of the undeveloped area construction, on March 10, 2014.

2.5 Engineering Controls

Several engineering controls exist on Site. The maintenance of these controls is necessary to maintain the protectiveness of the remedial measures and accomplish the remediation goals. Engineering controls at the Site include the following:

- Maintenance of Site caps in the developed area;
- Site cap in the undeveloped area;
- Vertical barrier wall around the Wolf Warehouse;
- The West Ditch cover system;
- Storm water controls; and
- The 55-foot buffer zone.

Maintenance, inspection frequency, and repair measures for engineering controls are included in **Tables 2** and **3**. To maintain the protectiveness of the soil cap in the undeveloped area, inspections will have to include the management of wildlife in the undeveloped area. This is included in **Tables 2** and **3** and discussed in Section 2.6 in detail.

2.5.1 Required Monitoring

Monitoring of each engineering control will be required on a regular basis. Monitoring frequency is detailed in **Table 2** and presented on the schedule presented in **Appendix F**. The integrity, operability, and effectiveness of the engineering controls will be monitored during inspections. The inspection will determine whether the engineering controls continue to be protective of public health and the environment. Damage to engineering controls will be repaired and steps taken to prevent reoccurring problems, where applicable.

An evaluation of vertical barrier wall effectiveness for potential ground water overtopping will be performed in accordance with Section 5.1.3 of the Developed Area RAW. Barrier wall effectiveness relative to overtopping will be monitored by measuring ground water levels within the eight piezometers installed inside of the vertical barrier wall. Engineering controls found not to be performing as designed will be evaluated by the Engineer and necessary repairs or upgrades will be performed.

2.5.2 Engineering Controls Reporting

Monitoring documentation and certifications will be prepared as discussed below in Section 3. A monitoring summary report will be prepared and submitted with each annual report and biennial certification. The reporting date and frequency are described in Section 1.4, above. The report will include applicable items as described in N.J.A.C. 7:26E-8.7(b) and (c).

2.6 Wildlife Management Plan

Quarterly inspections of the undeveloped area cap will be conducted as discussed above and in **Tables 2** and **3**. These inspections will target burrowing animals and are intended to accomplish the following:

- Prevent exposure pathways through the cap;
- Limit transportation of contaminants to the surface via burrowing;
- Reduce exposure of ecological receptors to contamination, either in the form of direct contact or indirect contact through animal waste or predatory consumption; and
- Limit other undesirable change to the cap that may occur through burrowing, such as increased porosity, increased infiltration, and the establishment of plants with penetrating roots (such as trees).

The undeveloped area cap will be inspected by a qualified individual for indicators of the presence of burrowing animals. These indicators include surface penetrations, soil piles from burrowing, irregular disturbances of shallow soils (commonly indicative of moles), and surface disturbances such as digging indicative of larger animals (such as groundhogs). Measures will be taken to remove any animals found on Site and prevent the reoccurrence of habitation or trespassing onto the Site by those animals. Any burrows found will be filled, after removal of any animals, if necessary. If indications exist that the biotic barrier was penetrated, excavation may be necessary to repair the layer. Repairs will be documented and included in the maintenance report. Observations regarding animal habitation will be recorded to determine long-term trends. Additional measures to prevent animal access to the Site and subsequent habitation may be necessary in cases where the animal's presence is reoccurring and compromises the integrity of the cap.

2.7 Land Use Regulation Permit Equivalency

The Land Use Regulation Permit (LURP) equivalency requires the monitoring of freshwater wetlands and riparian mitigation zones present on the Site for three and five full growing seasons, respectively. The maintenance of the mitigation zones includes regular inspections of planted vegetation and the elimination of invasive species identified within the mitigation areas.

The LURP equivalency inspection frequency is included in **Table 1**. Per permit equivalency requirements, maintenance of the mitigation areas, including removal of invasive species, will be performed as described in **Table 3**.

2.7.1 Required Monitoring

Monitoring of the mitigation areas covered under the permit equivalency will be required on a regular basis. The inspection frequency is detailed in **Table 1**. The inspection will assess the development of planted vegetation as well as invasive or noxious species colonizing the mitigation zones. A narrative evaluating the success or failure of the mitigation zones will be provided in the annual report if field data shows that the mitigation project is failing to meet

minimum vegetation survival, coverage, and health goals. The narrative will contain a discussion of steps necessary to rectify the problem, including a schedule of implementation.

2.7.2 Land Use Regulation Permit Equivalency Reporting

Monitoring documentation and certifications will be prepared as discussed below in Section 3. A monitoring summary report will be prepared and submitted with each biennial certification. The reporting date and frequency are described in Section 1.4, above. The report will include applicable items as described in N.J.A.C. 7:26E-8.7(b) and (c).

Section 3 – Documentation

3.1 Introduction

As part of the post-remediation OM&M activities, documentation of inspections, maintenance, operation, and monitoring activities will be conducted. The operation and effectiveness of the engineering controls and other site data and evaluations will be summarized in OM&M reports submitted to the NJDEP. These reports and the ongoing protectiveness of the remedy will be the basis for the five-year statutory review of the Site.

3.2 Recordkeeping

During the post-remediation OM&M period, activities related to the operation, maintenance, and monitoring at the Site will be documented as discussed below.

A master copy of the OM&M Plan will be maintained by the OM&M Contractor. Changes or additions to the Plan will be directly marked, initialed, and dated by the field personnel. Major changes to procedures will be submitted to the project team, including NJDEP, for approval.

A field logbook will be used by field personnel to document daily work activities.

Inspection forms will be used by the field inspector to document inspections and maintenance activities. These forms are presented in **Appendix B**.

Laboratory analysis results and gas monitoring measurements will be attached to the annual reports and biennial certifications.

Chain-of-custody forms will be used to document the handling of environmental samples, as described in **Appendix C**.

Records of delivered equipment and materials will be maintained by the OM&M Contractor.

Records of equipment and materials leaving the Site will be maintained by the OM&M Contractor.

Records of documentation concerning OM&M activities completed at the Site will be kept on file for at least five years by the OM&M Contractor. Copies will be sent to Morton for their files.

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3.3 Annual Report

An annual report will be prepared to summarize the applicable OM&M activities conducted over the previous year. The annual reports will be submitted to the NJDEP and EPA. Statistical trends will be analyzed and recommendations about future OM&M procedures made. Annual reporting and biennial certification may be included in the same report, when applicable.

3.4 Five-year Review

A CERCLA five-year statutory review will be conducted for the Site. The first review will be March 10, 2014 which is five years from the start of undeveloped area construction. The five-year review report will be submitted to the NJDEP as part of the review process. USEPA with possible support from the OM&M Contractor will prepare the 5-year review report. The respondents are willing are willing to provide support for USEPA's Five-year Review Report preparation effort. The report will summarize the five years of OM&M activities, and provide recommendations for continued OM&M, and where appropriate, modifications to various components of the OM&M Plan.

Section 4 – References

- 1) Exponent, "Remedial Investigation Report for the Ventron/Velsicol Site, Wood-Ridge/Carlstadt, New Jersey," June 2004. Volumes 1 to 4.
- New Jersey Department of Environmental Protection, Vapor Intrusion Guidance, October 2005.
- 3) New Jersey Department of Environmental Protection, Technical Requirements for Site Remediation, last amended April 19, 2010.
- 4) United States National Research Council, Committee on Remediation of Buried and Tank Wastes "Barrier Technologies for Environmental Management", National Academies Press, 1997
- 5) Parsons, 2008. Undeveloped Area Remedial Action Workplan for Ventron/Velsicol Superfund Site Operable Unit 1. Wood-Ridge and Carlstadt, New Jersey. May 16.
- 6) Parsons, 2008. Developed Area Remedial Action Workplan for Ventron/Velsicol Superfund Site Operable Unit 1. Wood-Ridge and Carlstadt, New Jersey. November 15.
- 7) Parsons, 2011. Remedial Action Report for Ventron Velsicol Operable Unit 1. Wood-Ridge and Carlstadt, New Jersey. April 15.
- 8) New Jersey Department of Environmental Protection, 2006. Record of Decision, Ventron/Velsicol Site, Wood-Ridge and Carlstadt, Bergen County, New Jersey. October.

Inspection Item	Task	Frequency
	Determine if actual or pending zoning and land-use is consistent with deed notices.	Biennial.
	Conduct Inspections for excavation or disturbance of soil.	Quarterly.
Deed Notices	Compare current laws, remediation standards, and other regulations to determine if new restrictions apply to the site.	Biennial.
	Develop a monitoring report per N.J.A.C. 7:26E-8.5(b).	Biennial.
	Comply with certification requirements per N.J.A.C. 7:26E-8.5(c) .	Biennial.
	CEA ground water sampling of wells CF-MW-1 through CF-MW-12, BW-MW-1 through BW-MW-8, MW-2, MW-8, MW-10, and MW-11.	Biannual.
	Compare current laws, remediation standards, and other regulations to determine if new restrictions apply to the site.	Biennial.
	Determine if any planned changes in the 25-year water use planning horizon will effect the aquifer(s) in which the groundwater CEA resides.	Biennial.
	Identify if actual changes have occurred in groundwater use.	Biennial.
Classification	Inspect all ground water monitoring wells and piezometers and maintain log.	Biannual.
Exception Area	Determine if land use disturbance could result in a contaminated discharge to surface water.	Biennial.
	Determine if protectiveness of CEA has been affected and if contaminate fate changes require CEA revisions.	Biennial.
	Assess ground water quality.	Biennial.
	Develop a monitoring report per N.J.A.C. 7:26E-8.6(b).	Biennial.
	Comply with certification requirements per N.J.A.C. 7:26E-8.6(c) .	Biennial.
	Monitor air quality in the Wolf Warehouse.	Summer and winter in 2008 then annual (summer) until the first 5-year review.
Air Monitoring	Develop a monitoring report per N.J.A.C. 7:26E-8.7(b).	Biennial.
	Comply with certification requirements per N.J.A.C. 7:26E-8.7(c) .	Biennial.
	Sample and analyze ground water in wells CF-MW-1 through CF-MW-12 in accordance with guidelines established in Developed Area RAW to investigate contaminant flux as first phase.	Biannual.
Contaminant Flux	Obtain ground water elevations in wells CF-MW-1 through CF-MW-12 as well as piezometers CF-PZ-1 through CF-PZ-4.	Biannual.
Monitoring	Develop a monitoring report per N.J.A.C. 7:26E-8.7(b).	Biennial; discuss additional phases with agencies prior to first 5-year review.
	Comply with certification requirements per N.J.A.C. 7:26E-8.7(c) .	Biennial.
	Conduct inspections for the establishment of planted vegetation and noxious or invasive species in the mitigation zones (55-foot buffer).	Biannual (spring and fall).
LURP Permit	Develop the NJDEP Wetland Mitigation Monitoring Project Checklist.	Annual; submitted to NJDEP no later than December 31 of each full monitoring year.
Equivalency	Develop a monitoring report per N.J.A.C. 7:26E-8.7(b).	Biennial.
	Comply with certification requirements per N.J.A.C. 7:26E-8.7(c) .	Biennial.
Bergen County Erosion and Sedimentation Control Inspection	Conduct the Bergen County Soil Erosion and Sedimentation Control Inspection in the undeveloped area and complete checklist.	Weekly through August 31, 2011; then quarterly thereafter as part of the undeveloped area cap inspection.

Table 2. Engineering Controls Inspection Frequency Ventron/Veliscol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

Inspection Item Task Inspect developed area caps for cracking, spalling or deterioration that affects to for water infiltration in the area surrounding Wolf Warehouse. Inspect the building foundation of the Wolf Warehouse for cracking or holes that warehouse. Developed Area	may allow for vapor intrusion into the
for water infiltration in the area surrounding Wolf Warehouse. Inspect the building foundation of the Wolf Warehouse for cracking or holes that warehouse. Payeloged Area.	may allow for vapor intrusion into the
Inspect the building foundation of the Wolf Warehouse for cracking or holes that warehouse. Developed Area	may allow for vapor intrusion into the
Developed Area	Quarterly.
Inspect railroad beds for surface cracking and/or exposure of underlying soil.	Quarterly.
Inspect parking areas, EJB area, and Ethel Boulevard.	Quarterly.
Inspect the soil cap for excessive erosion.	Quarterly.
Site Cap in the Inspect soil cap for differential settlement.	Quarterly.
Undeveloped Area Inspect cap for presence of burrowing animals.	Quarterly.
Inspect cap for undesirable vegetation.	Quarterly.
Monitor water levels in BW-MW-1 through BW-MW-8 as well as BW-PZ-1 througagainst overtopping.	h BW-PZ-8 to assess effectiveness Monthly during first year, then quarterly thereafter.
Monitor ground water chemistry in BW-MW-1 through BW-MW-8 to assess effe	iveness of vertical barrier wall. Quarterly for the first two years then biannually thereafter.
Vertical Barrier Inspect vertical barrier wall for damage from vehicle or equipment crossing.	Monthly during first year, then quarterly thereafter.
Wall Inspect vertical barrier wall for settlement.	Monthly during first year, then quarterly thereafter.
Underground collection tank level monitoring.	Monthly during first year, then quarterly thereafter.
Develop a report that evaluates effectiveness of vertical barrier wall.	Between 3 and 5 years after installation of monitoring wells, but prior to or during the first 5-year review. Then biennially thereafter.
Remove snow and ice, as necessary, around Wolf Warehouse to allow for prop	r drainage of capped areas. After snow events of greater than 6 inches and when deemed necessary.
Storm Water Inspect culverts, swales, and roof drains for blockage and sediment build up. R controls accumulated sediment.	nove any debris and clean Quarterly and after rainfall events of 1 inch or greater.
Inspect pavement for signs of ponding and poor drainage.	Quarterly and after rainfall events of 1 inch or greater.
Monitor for excessive erosion.	Quarterly.
Monitor riprap for damage and sediment build up.	Quarterly.
Inspect planted vegetation growth and remove invasive species.	Quarterly.
Monitor for habitation by burrowing animals.	Twice a year.
Monitor for sediment accumulation .	Quarterly.
West Ditch Monitor riprap for damage and sediment build up.	Quarterly.
Monitor for habitation by burrowing animals.	Twice a year.

		Ţ							
Inspection Item	Task	Common Repairs							
	Inspect developed area caps for cracking, spalling or deterioration that effects the protectiveness of the cap or allows for water infiltration in the area surrounding Wolf Warehouse.	Areas that expose soil or allow water infiltration into vertical barrier wall may require crack sealant, resurfacing, or replacement of concrete or asphalt surfaces.							
	Inspect the building foundation and perimeter concrete cap of the Wolf warehouse for differential settlement .	ubsidence or settling on the developed area cap shall be subject to the review and approval of repairs under the supervision of a registered proffesional engi							
Site Cap in the Developed Area	Inspect condition of railroad beds.	Refresh ballast if necessary.							
	Inspect parking areas, EJB property and Ethel Boulevard.	Cracked pavement may need repairs or resurfacing.							
	Inspect the building foundation of the Wolf warehouse for cracking or holes that may allow for vapor intrusion into the warehouse.	Open cracks should be routed and sealed with epoxy.							
	Inspect the soil cap for excessive erosion.	Areas of erosion should be leveled by backscraping or raking and brought back to grades shown on record drawings with suitable soils. Area should be reseeded and erosion prevention measures should be instituted if necessary. Areas of persistent erosion on the undeveloped area cap or associated features shall be subject to the review and approval of repairs under the supervision of a registered proffesional engineer.							
Site Cap in the	Inspect soil cap for differential settlement.	Areas of differential settlement will be repaired by removing topsoil and using clean fill as outlined in construction documents to raise area to grades. Topsoil should be replaced, and the area reseeded. If damage has occurred to biotic barrier, stone material should be inserted before filling to repair barrier. Subsidence or settling on the undeveloped area cap shall be subject to the review and approval of repairs under the supervision of a registered proffesional engineer.							
Undeveloped Area	Inspect cap for presence of burrowing animals.	Undesirable animals found onsite may be removed from the site and burrow entrances filled.							
	Inspect cap for undesirable vegetation.	Remove any trees, shrubs, or other undesirable vegetation by hand pulling, mechanical, or chemical methods.							
Vertical Barrier Wall	Monitor water levels in BW-MW-1 through BW-MW-8 as well as BW-PZ-1 through BW-PZ-8 to assess effectiveness against overtopping.	Water level readings will be tracked to monitor the danger of ground water accumulation inside the vertical barrier wall.							
vertical darrier vvall	Underground collection tank level monitoring.	Water levels observed in the tank exceeding 70% of the tanks capacity will require pump out and offsite disposal.							

	Inspect vertical barrier wall for damage from vehicle or equipment crossing.	If portions of the wall are determined at any time to be damaged or not functioning as designed, then actions will be taken with the supervision of a registered professional engineer and in cooperation with regulatory authorities to repair the portions of the wall so that design criteria are maintained.								
Vertical Barrier Wall	Inspect vertical barrier wall for settlement.	If portions of the wall are determined at any time to be damaged or not functioning as designed, then actions will be taken with the supervision of a registered professional engineer and in cooperation with regulatory authorities to repair the portions of the wall so that design criteria are maintained.								
	Monitor ground water chemistry in BW-MW-1 through BW-MW-8 to assess effectiveness of vertical barrier wall.	pically, sheet piles are expected to have a 30 year life span. In many situations the sheet piles still function well after 30 years. Ongoing monitoring will be nducted to evaluate the barrier wall. This monitoring will continue after 30 years using the effectiveness approach described in the RAW. If portions of the edetermined at any time to be not functioning as designed, then actions will be taken with the supervision of a registered professional engineer and in operation with regulatory authorities to repair the portions of the wall so that design criteria are maintained.								
Storm Water Controls	Inspect culverts, swales, and roof drains for blockage and sediment build up. Remove any debris and clean accumulated sediment.	Any storm water control damaged will be repaired. Any control failing to perform will be reviewed by the Engineer.								
Storm water controls	Inspect pavement for signs of ponding and poor drainage.	Pavement slopes may require repair if heaving or settling causes ponding.								
	Monitor for excessive erosion.	Areas of erosion will be repaired as described above in Site Cap section.								
55- Foot Buffer	Monitor riprap for damage and sediment build up.	Damage to riprap will be repaired. Accumulated sediment should be washed clear.								
33-1 oot Bullel	Inspect vegetation growth and remove invasive species.	Remove any undesirable vegetation (i.e. invasive species) by approved hand pulling, mechanical, or chemical methods. Vegetation should be maintained to standards established in the RAW and construction documents.								
	Monitor for habitation by burrowing animals.	Burrowing animals should be removed as described above.								
	Monitor for sediment accumulation.	Accumulated sediments which effect drainage should be removed. Removed sediments will be disposed of offsite in accordance with local, state, and federal regulation.								
West Ditch	Monitor riprap for damage and sediment build up.	Maintain riprap as described above.								
	Monitor for habitation by burrowing animals.	Burrowing animals should be removed as described above in Site Cap section.								

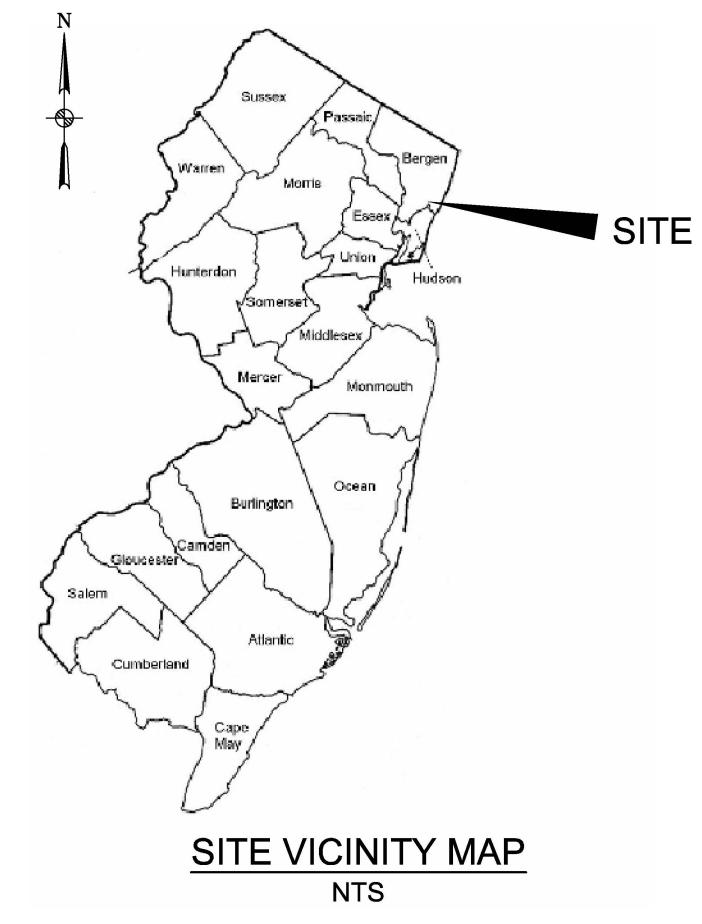
ID	Task Name	Duration	Start	Finish	Half 1, 2011 J F M A M J	1 Hal	f 2, 201′	1 Half	1, 2012 MA M.	2 Half 2	2, 2012	Half 1,	2013 MJ.I	Half 2, 2	013 F	Half 1, 20	014 Ha	alf 2, 201	14 Half	1, 2015 MAMJ	Half 2, 2	015 H
1	Five Year OM&M Schedule for Ventron/Velsicol OU-1	1270 days	Wed 2/16/11	Wed 12/30/15			10 10 11 11				101.112					.						
2	<u>Inspections</u>	1243 days	Tue 3/1/11	Thu 12/3/15	-												_					~
3	Erosion and Sedimentation Control Inspections 2011	198 days	Tue 3/1/11	Thu 12/1/11			r.															
30	Erosion and Sedimentation Control Inspection 2012 through 2015	981 days	Thu 3/1/12	Thu 12/3/15				I	I	ı	I	I	I	I	I	I	I	I	ııı	ı ı	I	I
47	Vertical Barrier Wall Inspection 2011	198 days	Tue 3/1/11	Thu 12/1/11	1 1 11	I I	1 I I I															
58	Vertical Barrier Wall Inspection 2012 through 2015	981 days	Thu 3/1/12	Thu 12/3/15				I	I	ı	I	I	I	I	I	I	I	I	ııı	ı ı	I	I
75	Quarterly Deed Notice Inspection	1233 days	Tue 3/15/11	Thu 12/3/15	I	g .	ı ı	I	I	ı	I	I	I	I	I	I	I	I	ıı	1 1	I	I
96	Check for pending changes to zoning, land use, law, or standards	504 days	Thu 1/3/13	Fri 1/2/15								l _m										
97	General Site Inspection	1168 days	Tue 3/15/11	Thu 9/3/15	I		I	I		I		I		I		I		I	I	ι	I	
108	Developed Area Cap Inspection	1233 days	Tue 3/15/11	Thu 12/3/15	ı	Ē	1 1	I	I	ı	I	ı	1	I	I	I	I	I	ı	i i	Ĭ	I
129	Undeveloped Area Cap Inspection	1233 days	Tue 3/15/11	Thu 12/3/15	ı	A CONTRACTOR OF THE CONTRACTOR	1 1	1	I	ı	I	I	1	I	I	I	r	I	1 1	; r	I	ı
150	55-foot Buffer and West Ditch Inspection	1233 days	Tue 3/15/11	Thu 12/3/15	ı	į.	ı	ı	1	ı	I	I	1	I	I	I	I	I	ıı	. I	I	I
171	Monitor for Habitation by Burrowing Animals	1188 days	Tue 3/15/11	Thu 10/1/15	ı		I		I		I	ı		I		I		I		I	I	
182	CEA Ground Water Monitoring Well and Piezometer Inspection	1188 days	Tue 3/15/11	Thu 10/1/15	ı		I		I		I	ı		I		I		I		I	I	
193	Check for pending changes to 25-year water use horizon, actual changes in water use, contaminate fate, ground water quality, zoning, land use, law, or standards	522 days	Thu 1/3/13	Fri 1/2/15																		
194	LURP Inspection	1106 days	Thu 7/7/11	Thu 10/1/15		ī	I		I		r	ı		I		I		1		I	I	
205	Wolf Warehouse Indoor Air Monitoring	1046 days	Thu 9/1/11	Thu 9/3/15			I			1				I				I			I	
211	Ground Water Monitoring	1181 days	Tue 3/1/11	Tue 9/8/15																		
212	CEA Ground Water Sampling, Water Level Measurement, and Analysis	1172 days	Mon 3/14/11	Tue 9/8/15	0		0	0		0		0		0		0		0	0	ı	0	
223	Vertical Barrier Wall Ground Water Level Monitoring 2011	198 days	Tue 3/1/11	Thu 12/1/11	1 1 111111	и	I															
245	Vertical Barrier Wall Ground Water Sampling, Water Level Measurement, and Analysis 2011 and 2012	455 days	Mon 3/14/11	Fri 12/7/12	0	É	I I	I	1	I	I											
254	Vertical Barrier Wall Ground Water Sampling, Water Level Measurement, and Analysis 2013 through 2015	652 days	Thu 3/7/13	Fri 9/4/15								I		I		I		I	I		I	
261	Contaminant Flux Ground Water Sampling, Water Level Management, and Analysis	1171 days	Mon 3/14/11	Mon 9/7/15	0		0	0		0		0		0		0		0	0	a	0	
272	<u>Reporting</u>	1270 days	Wed 2/16/11	Wed 12/30/15	-												—					—
273	Interim Quarterly Report Submission to Rohm and Haas	1158 days	Tue 5/10/11	Fri 10/16/15	\Diamond	\Diamond	\Diamond	\Diamond	\Diamond	\Diamond	\Diamond	< <	>	\Diamond \Diamond	¢	>	\Diamond	\Diamond	\Diamond	\Diamond	\Diamond \Diamond	
293	LURP Annual Checklist Report Submission to NJDEP	1058 days	Fri 12/9/11	Wed 12/30/15				\rightarrow			<	\$			\Diamond				\Diamond			\Diamond
304	Annual OM&M Report Submission to NJDEP	798 days	Fri 3/23/12	Wed 4/15/15					\Diamond			<	>			\Diamond				\Diamond		
313	Barrier Wall Effectiveness Report	0 days	Wed 12/10/14	Wed 12/10/14															12/10	0		
314	Biennial Certification Report Submission to NJDEP	537 days	Mon 3/25/13	Wed 4/15/15								<	>							\Diamond		
319	Annual Hazardous Waste Reporting Submission to EPA (if necessary)	1053 days	Wed 2/16/11	Sun 3/1/15	♦			\Diamond				\Diamond				\Diamond			\Diamond	>		
330	CERCLA Five-year Review Report Submission to NJDEP	15 days	Fri 10/4/13	Fri 10/25/13										♦	>							
	t: Ventron/Velsicol Superfund Site OU-1 OM&M Schedule Thu 6/30/11 Task Progres Split Milestor			Summary Project Sur	mmary 🔽					al Task al Miles	_	>			Deadli	ine	ú)				

APPENDIX A – RECORD DRAWINGS

OPERATION, MAINTENANCE, AND MONITORING PLAN VENTRON/VELSICOL SUPERFUND SITE OU-1 WOOD-RIDGE AND CARLSTADT BOROUGHS, NJ

FIGURE LIST

SHEET NO.	REV	DESCRIPTION
FIGURE 1	-	COVER SHEET
FIGURE 2	-	GENERAL NOTES AND LEGEND
FIGURE 3	-	PRE-CONSTRUCTION SITE CONDITIONS
FIGURE 4	-	SITE STAGING PLAN AND AIR MONITORING STATIONS
FIGURE 5	-	LIN-MOR PROPERTY EXCAVATION AS-BUILT AND POST-EXCAVATION SAMPLE LOCATIONS
FIGURE 6	-	DRUM REMOVAL LOCATIONS
FIGURE 7	-	EXCAVATION LIMITS A, C, AND D
FIGURE 8	-	EXCAVATION LIMITS E AND F
FIGURE 9	-	EXCAVATION LIMITS G
FIGURE 10	-	EXCAVATION LIMITS H
FIGURE 11	-	EXCAVATION LIMITS I
FIGURE 12	-	EXCAVATIONS LIMITS OF FORMER DRAIN AREA
FIGURE 13	-	WEST DITCH AND 55-FT. BUFFER RESTORATION
FIGURE 14	-	VERTICAL BARRIER WALL ALIGNMENT AND COLLECTION SYSTEM
FIGURE 15	-	BARRIER WALL PROFILE SHEET 1 OF 2
FIGURE 16	-	BARRIER WALL PROFILE SHEET 2 OF 2
FIGURE 17	-	VERTICAL BARRIER WALL DETAILS
FIGURE 18	-	UNDEVELOPED AREA CAP SUBGRADE
FIGURE 19	-	CAP LIMITS - UNDEVELOPED AREA
FIGURE 20	-	CAP LIMITS - DEVELOPED AREA
FIGURE 21	-	DEVELOPED AREA CAP DETAILS SHEET 1 OF 2
FIGURE 22	-	DEVELOPED AREA CAP DETAILS SHEET 2 OF 2
FIGURE 23	-	RAILROAD SIDING AND IMPROVEMENT DETAILS
FIGURE 24	-	UNDEVELOPED AREA FINAL GRADING PLAN
FIGURE 25	-	MONITORING WELL AND PIEZOMETER LOCATION PLAN
FIGURE 26	-	NORFOLK SOUTHERN RAILROAD PROPERTY CAP AREAS & DELINEATION SAMPLING RESULTS
FIGURE 27	-	CONTAMINANT FLUX MONITORING AND SAMPLING PLAN
FIGURE 28	-	CLASSIFICATION EXCEPTION AREA MONITORING AND SAMPLING PLAN
FIGURE 29	-	VERTICAL BARRIER WALL EFFECTIVENESS MONITORING AND SAMPLING PLAN

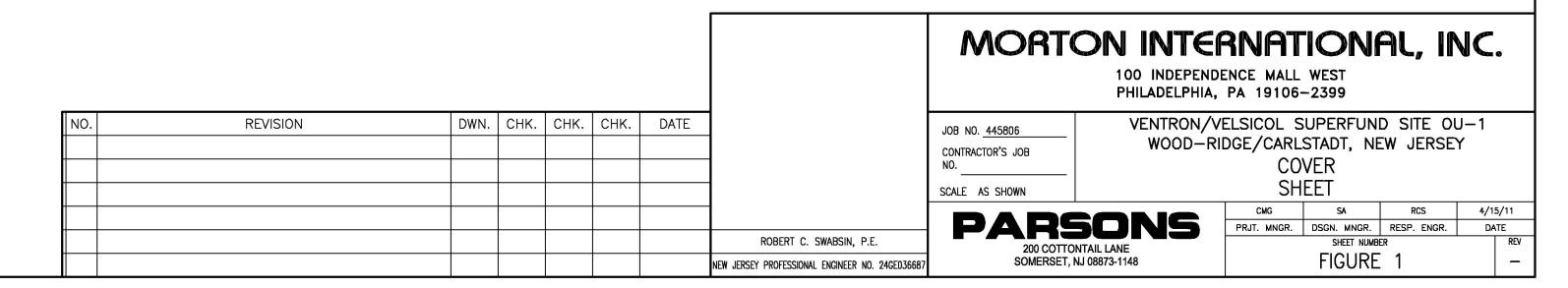


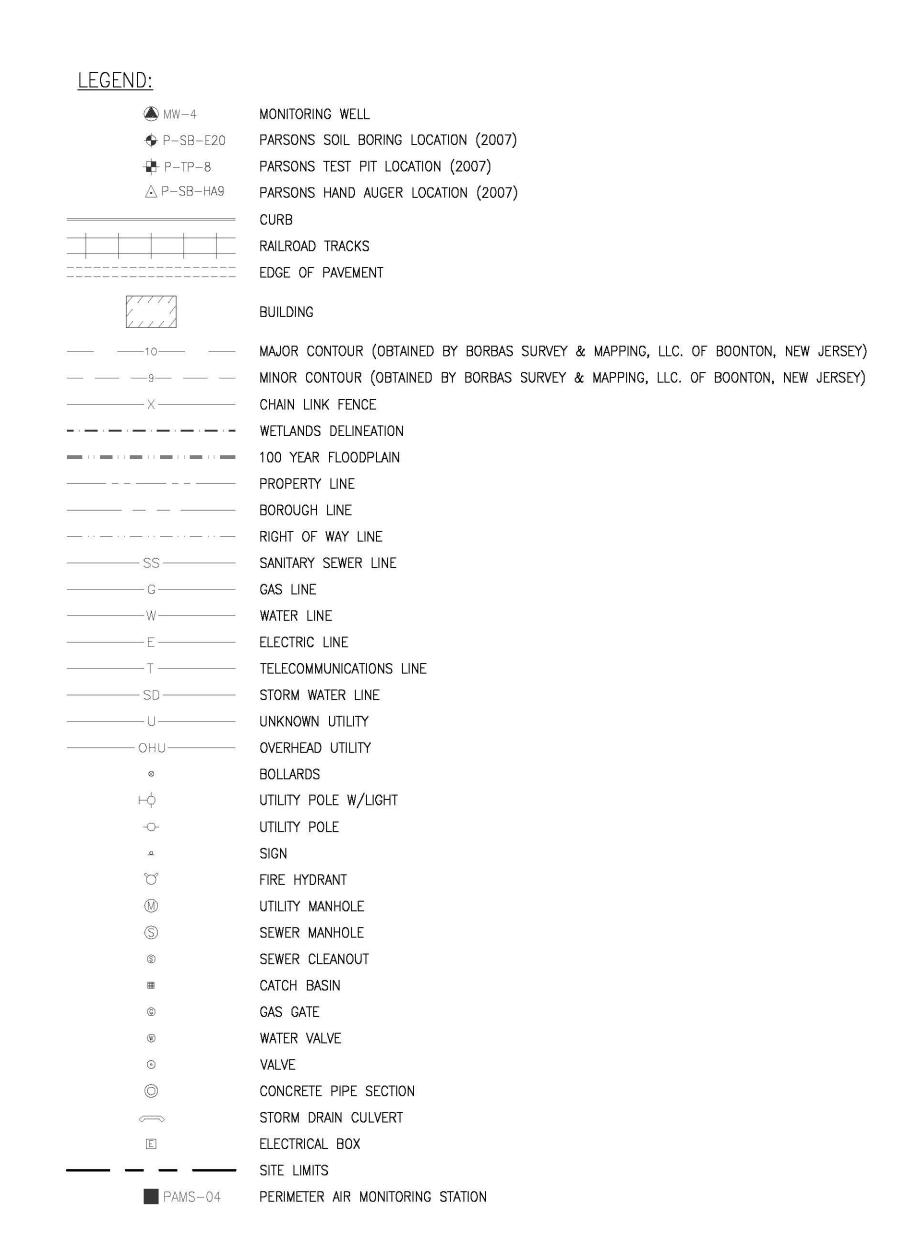


SITE LOCATION MAP

1" = 500'

OM&M PLAN





SURVEY NOTES:

- 1. BASEMAP COMPILED BY J. PETER BORBAS OF BOONTON, NEW JERSEY, DATED JULY 18,
- 2. XRF BORING LOCATION SURVEY INFORMATION OBTAINED FROM J. PETER BORBAS OF BOONTON, NEW JERSEY, BETWEEN FEBRUARY 22 AND MARCH 11, 2009.
- 3. AS-BUILT CONDITIONS PROVIDED BY KENNON SURVEYING SERVICES OF WARREN, NEW JERSEY. AS-BUILT FIGURES FROM KSS PRESENTED IN APPENDIX B.
- 4. HORIZONTAL DATUM IS NAD83 PROJECTION NEW JERSEY STATE PLANE COORDINATE SYSTEM DETERMINED BY DIFFERENTIAL GPS ON JUNE 19, 2007 USING THE NGS COR STATIONS NJ12, NJDY, AND NJMT.
- 5. VERTICAL DATUM IS NGVD1929 DETERMINED BY DIFFERENTIAL LEVELING USING NGS TIDAL BENCHMARKS PID-KV3467 (EL. 7.49) AND PID-KV3469 (EL 6.50)
- 6. EXISTING EXPLORATION LOCATIONS ARE APPROXIMATE. LOCATIONS OBTAINED FROM OVERLYING EXISTING CONDITIONS FIGURE AND FIGURE N-1 FROM REMEDIAL INVESTIGATION (RI), DATED JUNE 2004.
- 7. SITE LIMITS INCLUDE THE "DEVELOPED", "UNDEVELOPED" AND "OFF-SITE" AREAS OF THE PROJECT.
- 8. UNITS ARE IN FEET, UNLESS OTHERWISE NOTED.

SITE WORK NOTES:

- 1. REFERENCES TO ITEM NUMBERS ARE TO THE NEW JERSEY DEPARTMENT OF TRANSPORTATION (NJDOT) CONSTRUCTION AND MATERIAL SPECIFICATIONS. ALL ROAD, STORM WATER AND PAVEMENT CONSTRUCTION WAS DONE IN ACCORDANCE WITH NJDOT SPECIFICATIONS AND APPLICABLE BERGEN COUNTY STANDARDS, WITH THE MORE STRINGENT REQUIREMENTS GOVERNING WHERE THEY CONFLICT.
- 2. THE GARDEN STATE UNDERGROUND PLANT LOCATION SERVICE (ONE-CALL) WAS NOTIFIED TO MARK OUT EXISTING UNDERGROUND UTILITIES.
- 3. THE 55-FT. BUFFER ZONE WAS ESTABLISHED BY FIELD SURVEY OF THE MEAN HIGH TIDE ELEVATION +3.4 ALONG THE ADJACENT WATER WAYS AND OFFSETTING THE ALIGNMENT UPLAND BY 55 FEET.

EROSION AND SEDIMENT CONTROL NOTES:

- 1. SOIL EROSION AND SEDIMENT CONTROL PRACTICES WERE INSTALLED IN ACCORDANCE WITH THE STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY (NJ STANDARDS), AND MAINTAINED UNTIL PERMANENT STABILIZATION WAS ESTABLISHED.
- 2. SOIL EROSION AND SEDIMENT CONTROL MEASURES WERE INSPECTED AND MAINTAINED ON A REGULAR BASIS, INCLUDING AFTER EVERY STORM EVENT.

SEQUENCE OF CONSTRUCTION:

- THE FOLLOWING WAS THE SEQUENCE OF CONSTRUCTION:
- 1. EROSION AND SEDIMENT CONTROL INSTALLATION
- SITE CLEARING
- SITE STAGING
- 4. EXCAVATION OF SITE RELATED CONTAMINATION FROM THE LIN-MOR PROPERTY
- 5. CONSTRUCTION WATER TREATMENT PLANT AND INFILTRATION BASIN CONSTRUCTION
- 6. EXCAVATION AND BACKFILL OF SOIL WITH MERCURY CONCENTRATIONS >620 MG/KG IN AREAS A, E/F, G, H, AND I (PARTIAL)
- 7. FORMER DRAIN LINE PIPE EXCAVATION IN AREAS DL1, AND DL2
- 8. EXCAVATION AND BACKFILL OF 55-FT. BUFFER ZONE EXCEPT ALONG WEST DITCH
- 9. EXCAVATION AND BACKFILL OF SOIL WITH MERCURY CONCENTRATIONS >620 MG/KG IN AREAS C, D, AND I (PARTIAL)
- 10. VERTICAL BARRIER WALL INSTALLATION
- 11. WEST DITCH 55-FT. BUFFER EXCAVATION AND BACKFILL
- WEST DITCH RESTORATION
- 13. DEVELOPED AREA CAP AND STORMWATER CONTROL INSTALLATION
- 14. DEMOBILIZATION OF CONSTRUCTION WATER TREATMENT PLANT
- 15. UNDEVELOPED AREA CAP INSTALLATION
- 16. MONITORING WELL AND PIEZOMETER INSTALLATION
- 17. DEMOBILIZATION

OM&M PLAN

DWN. CHK. CHK. CHK. DATE REVISION SCALE AS SHOWN ROBERT C. SWABSIN, P.E. EW JERSEY PROFESSIONAL ENGINEER NO. 24GE0366

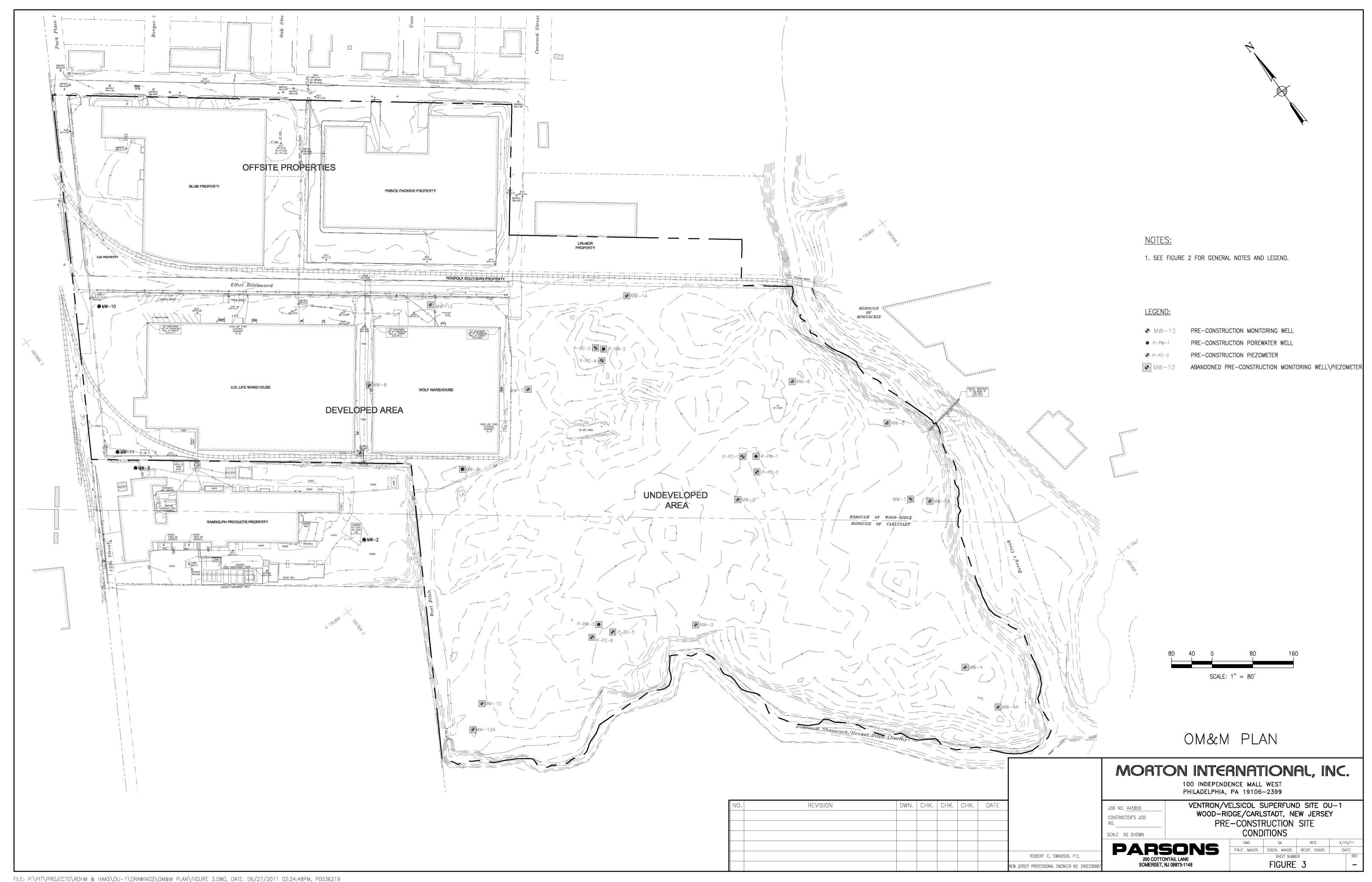
MORTON INTERNATIONAL, INC.

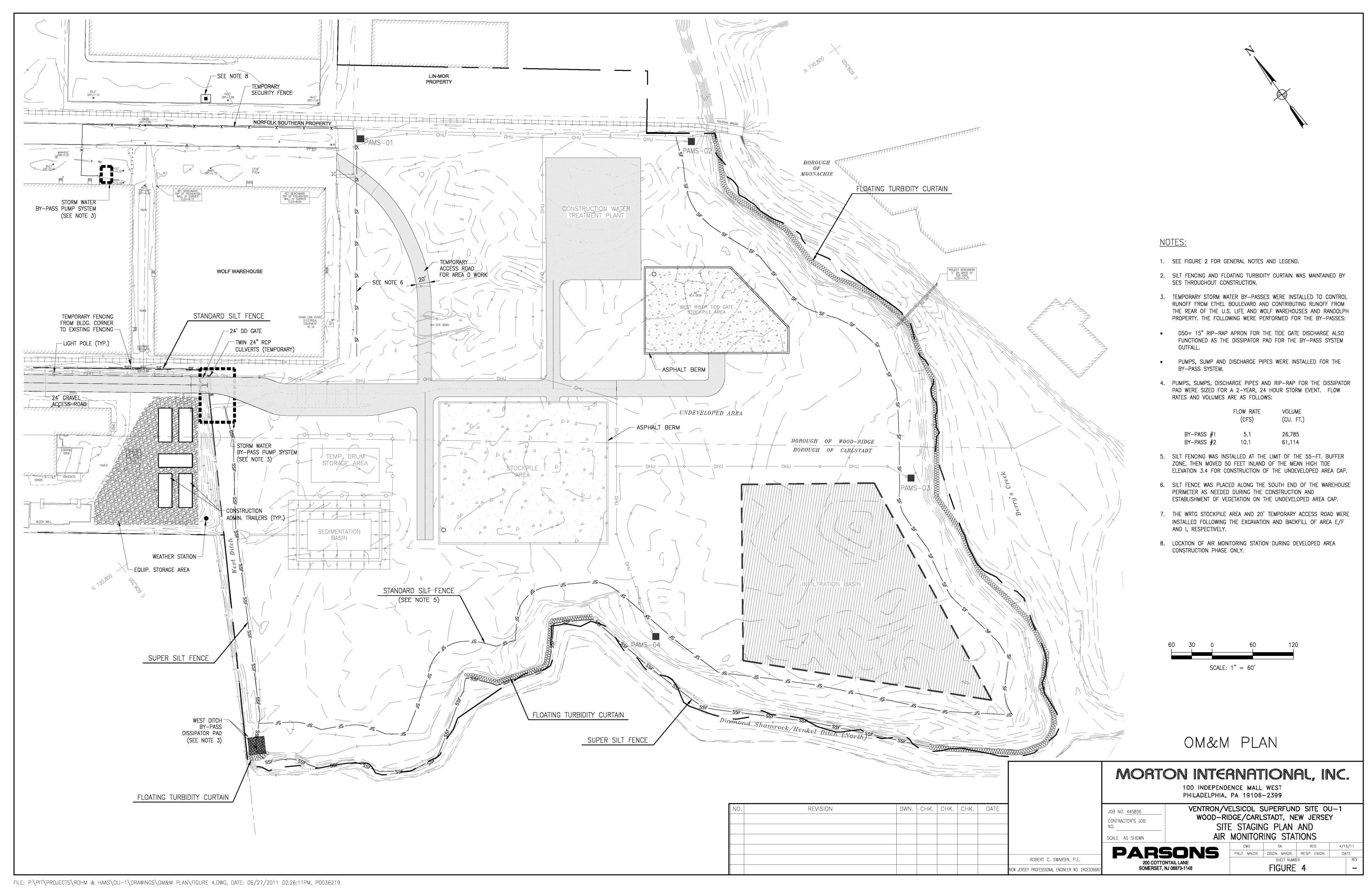
100 INDEPENDENCE MALL WEST PHILADELPHIA, PA 19106-2399

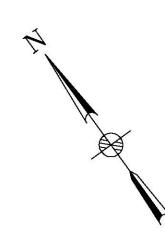
JOB NO. 445806 CONTRACTOR'S JOB VENTRON/VELSICOL SUPERFUND SITE OU-1 WOOD-RIDGE/CARLSTADT, NEW JERSEY GENERAL NOTES AND LEGEND



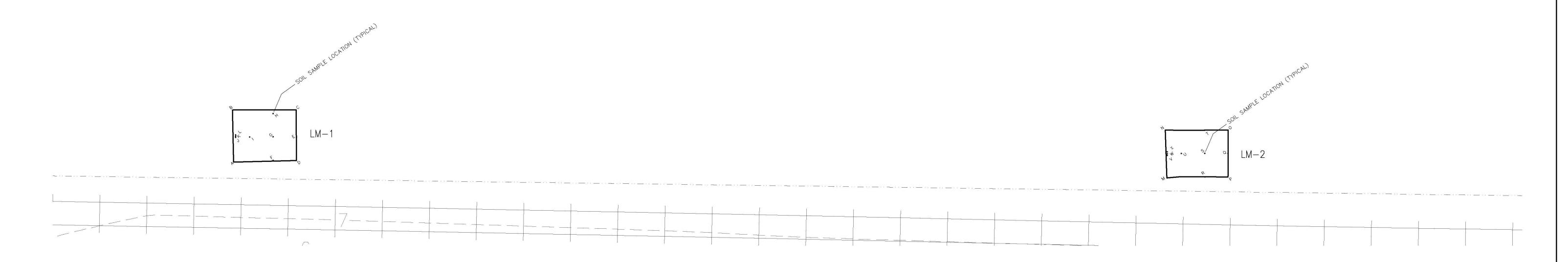
CMG SA RCS 4/15/11 PRJT. MNGR. DSGN. MNGR. RESP. ENGR. DATE SHEET NUMBER FIGURE 2







LIN-MOR **PROPERTY**



REVISION

DWN. CHK. CHK. CHK. DATE

AS-BUILT LIMITS OF EXCAVATION

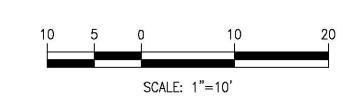
AS-BUILT POST-EXCAVATION SAMPLE LOCATION

EXCAVATION & SAMPLE DATA

POINT	NORTHING	EASTING	PAVEMENT ELEVATION	BOTTOM OF EXCAVATION	DESCRIPTION
Α	731071.19	608968.47	8.17	5.9	EXCAVATION LIMIT
В	731080.32	608974.79	8.12	5.9	EXCAVATION LIMIT
	731072.37	608985.82	8.14	6.0	EXCAVATION LIMIT
C D E F	731063.60	608979.50	8.08	5.7	EXCAVATION LIMIT
E	731067.65	608982.45	8.03		P-SS = PARSONS SOIL SAMPLE (TYPICAL)
	731066.55	608975.50	8.07		P-SS
G	731070.60	608978.45		5.9	P-SS
Н	731074.60	608981.35	7.93		P-SS
	731073.50	608974.40	7.97		P-SS
J	731075.20	608971.93	7.95		P-SS
K	731075.38	608972.06	7.95		P-SS
L	731075.62	608972.23	7.95		P-SS
M	730951.61	609127.33	9.13	6.7	EXCAVATION LIMIT
Ν	730960.07	609133.06	8.74	6.6	EXCAVATION LIMIT
0 P	730952.20	609143.90	8.68	6.7	EXCAVATION LIMIT
Ρ	730944.10	609138.00	8.87	6.7	EXCAVATION LIMIT
Q R	730948.15	609140.95	8.77		P-SS
K	730947.05	609134.00	8.92		P-SS
S T	730951.10	609136.95	0.05	6.7	P-SS
	730955.10	609139.85	8.65		P-SS
U	730954.00	609132.90	8.8		P-SS
V	730955.43	609130.23	8.75		P-SS
W	730955.73	609130.45	8.74		P-SS
X	730956.06	609130.69	8.74	is .	P-SS

NOTES:

- 1. SEE FIGURE 2 FOR GENERAL NOTES AND LEGEND.
- 2. TABLE AND LOCATIONS PROVIDED BY BORBAS SURVEYING AND MAPPING, LLC.



OM&M PLAN

MORTON INTERNATIONAL, INC. 100 INDEPENDENCE MALL WEST PHILADELPHIA, PA 19106-2399

ROBERT C. SWABSIN, P.E.

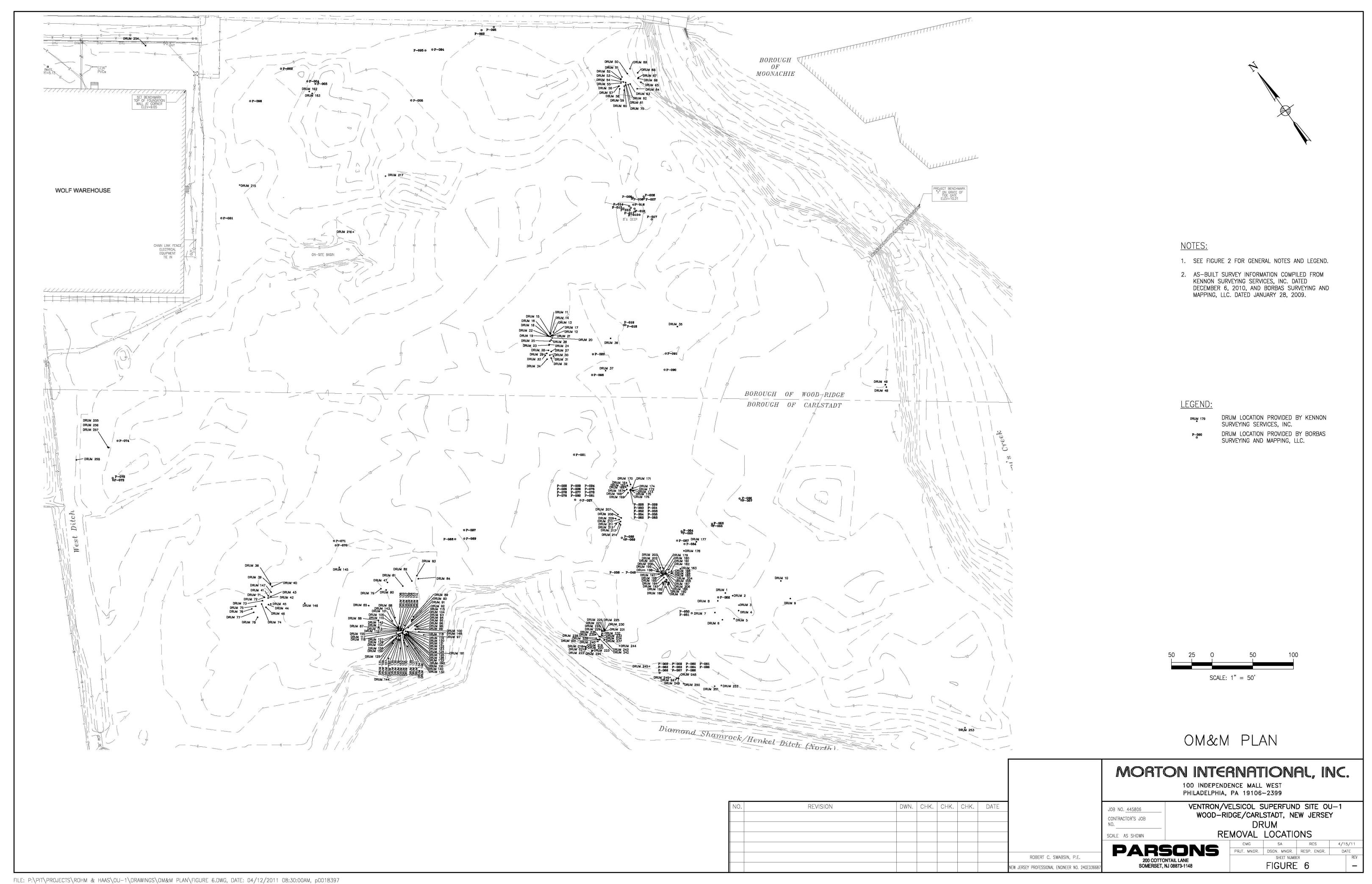
NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE03668

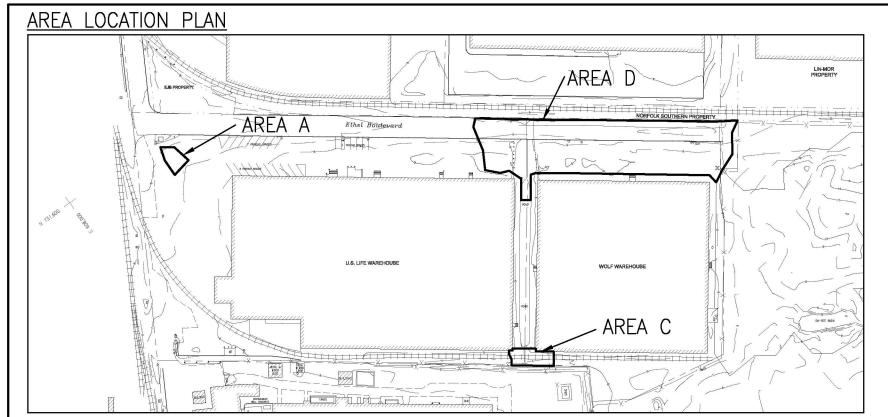
CONTRACTOR'S JOB

VENTRON/VELSICOL SUPERFUND SITE OU-1 WOOD-RIDGE/CARLSTADT, NEW JERSEY LIN-MOR PROPERTY EXCAVATION AS-BUILT AND POST-EXCAVATION SAMPLE LOCATIONS

200 COTTONTAIL LANE SOMERSET, NJ 08873-1148

PRJT. MNGR. DSGN. MNGR. RESP. ENGR. DATE FIGURE 5





EXCAVATION INFORMATION

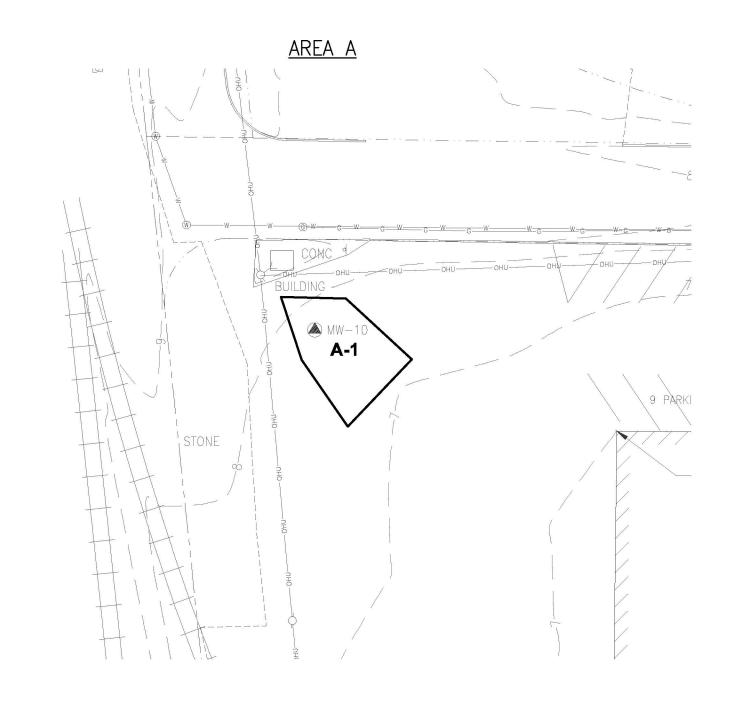
A	883.5	GS	3.8	7.6	3.8	124	3.7	11/10/2009	127	N/A
,		TOP	BOTTOM					1111010055	100	81.6
NREA ID	AREA (SQFT)		ON1 OF SOIL > 620 MG/KG	ESTIMATED ELEVATION OF GS	ESTIMATED THICKNESS OF SOILS WITH HG >620 mg/Kg TO EXCAVATE (FT)	1	AS-BUILT ELEVATION BOTTOM OF EXCAVATION	LAST DATE OF BOTTOM OF EXCAVATION FIELD MEASUREMENTS	VOLUME OF EXCAVATED MATERIAL CU. YDS.	AS-BUILT ELEVATION BOTTOM OF SCREENED MATERIAL

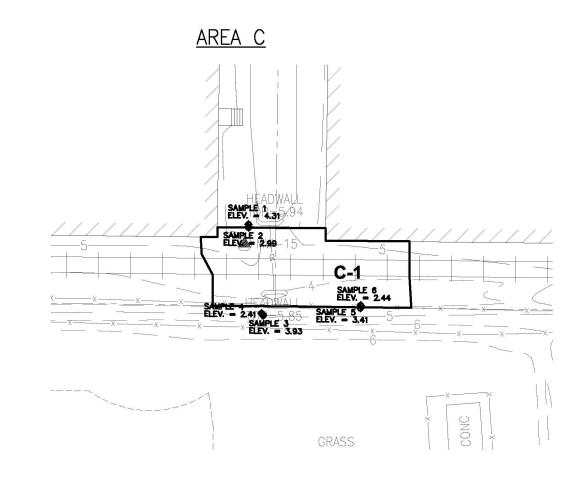
485418	AREA (SQ	LAUTELL LIC	FION OF SOIL > 620 MG/KG		ESTIMATED THICKNESS OF SOILS WITH HG >620	APPROXIMATE VOLUME	AS-BUILT ELEVATION	LAST DATE BOTTOM OF EXCAVATION	VOLUME OF EXCAVATED	AS-BUILT ELEVATION BOTTOM OF
AREA ID	FT)	TOP	воттом	ELEVATION OF GS	mg/Kg TO EXCAVATE (FT)	(CU YDS)	BOTTOM OF EXCAVATION	FIELD MEASUREMENTS	MATERIAL CU. YDS.	SCREENED MATERIAL
C-1	1388.2	GS	3	4.2	1.2	62	2.8	4/16/2010	74	N/A
					TOTAL (cu yds) =	62			74	

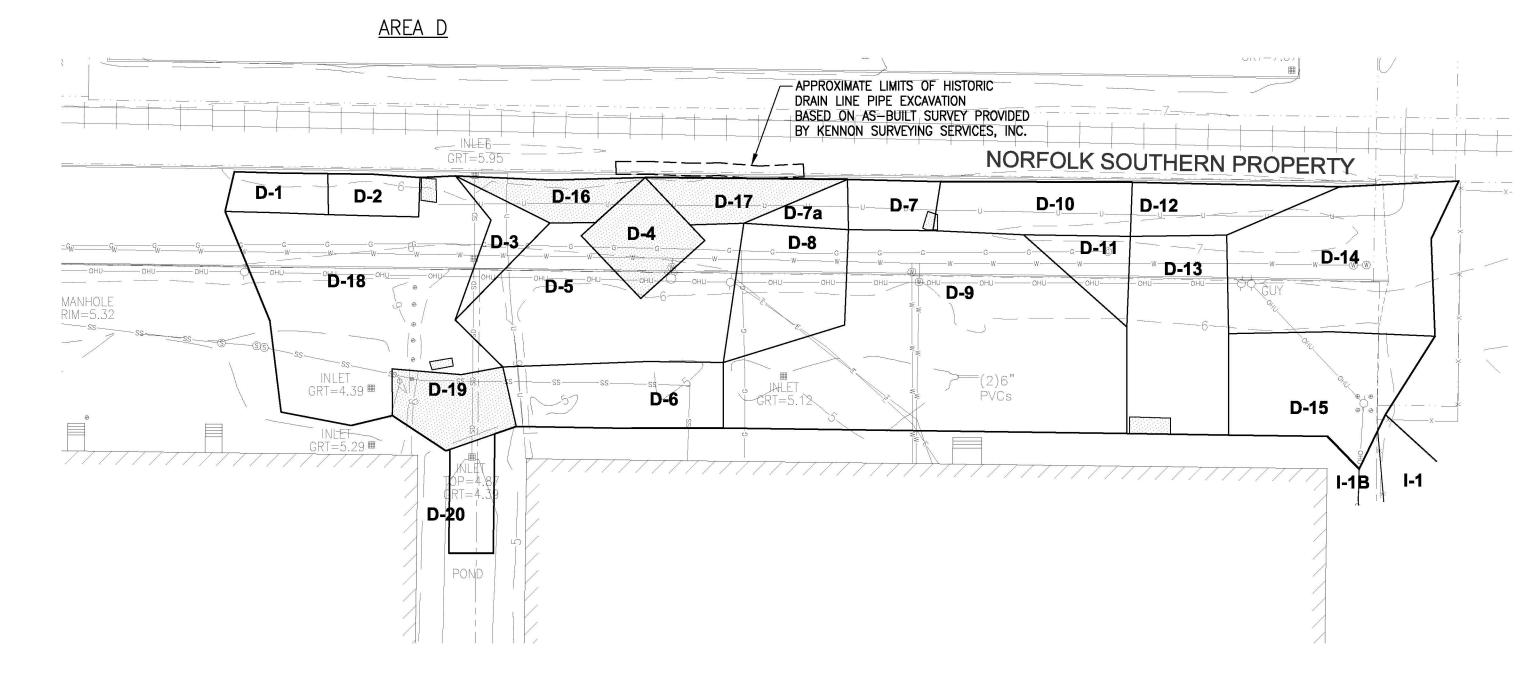
AREA ID	AREA (SQ FT) FROM CONST. PLANS		ON1 OF SOIL > 620 MG/KG	ESTIMATED ELEVATION OF GS	ESTIMATED THICKNESS OF SOILS WITH HG >620 mg/Kg TO EXCAVATE (FT)	APPROXIMATE VOLUME (CU YDS)	AS-BUILT ELEVATION BOTTOM OF EXCAVATION	LAST DATE OF BOTTOM OF EXCAVATION FIELD MEASUREMENTS	VOLUME OF EXCAVATED MATERIAL CU. YDS.
		TOP	BOTTOM						
D-1	385.2	GS	4.4	6.2	1.8	26	4	5/28/2010	31
D-2	364.0	GS	1.9	6.1	4.2	57	1.6	5/28/2010	61
D-3	413.7	GS	-0.3	6.1	6.4	98	-0.5	6/1/2010	101
D-4	1122.8	GS	-23.6	6.2	29.8	1239	-23.9	7/17/2010	813
D-5	2551.3	GS	-10	6	16	1512	-10,2	6/9/2010	1531
D-6	1341.9	GS	0	5.1	5.1	253	-0.2	6/9/2010	263
D-7	684.7	GS	-5.7	6.6	12.3	312	-6	7/26/2010	200
D-7a							-14.4	7/27/2010	199
D-8	1273.3	GS	2.6	6	3.4	160	2.4	6/10/2010	170
D-9	6010.1	GS	-2.3	6.1	8.4	1870	-2,5	6/16/2010	1914
D-10	990.9	GS	-3.6	6.8	10.4	382	-3.9	7/29/2010	393
D-11	472.1	GS	1,1	6.7	5.6	98	0,9	6/16/2010	101
D-12	767.8	GS	-3.3	6.9	10.2	290	-3.8	8/2/2010	304
D-13	1947.4	GS	3.4	6.5	3.1	224	3.2	6/16/2010	238
D-14	2764.0	4.9	-2.4	6.7	7.3	747	-2.7	8/2/2010	962
D-15	1836.3	GS	-0.6	6.2	6.8	462	-0.8	6/28/2010	476
D-16	410.5	GS	-16.1	6	22.1	336	-16.2	7/30/2010	405
D-17	486.9	GS	-16	6.3	22,3	402	-16.1	7/29/2010	474
D-18	4096.8	GS	0.7	5.7	5	759	0.3	6/2/2010	819
D-19	753.2	GS	-4.3	4.9	9.2	257	-4.5	6/3/2010	262
D-20	486.6	GS	3.4	4.6	1.2	22	3.2	5/24/2010	25
					TOTAL (cu yds) =	9506			9742

NOTES:

- 1. SEE FIGURE 2 FOR GENERAL NOTES AND LEGEND.
- 2. SURVEY AS-BUILT EXCAVATION VOLUMES ARE BASED ON A COMPARISON BETWEEN AS-BUILT EXCAVATION ELEVATIONS AND PRE-CONSTRUCTION GROUND SURFACE ELEVATIONS.
- 3. ESTIMATED ELEVATION OF GROUND SURFACE IS BASED ON HIGHEST ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG OBSERVED IN DELINEATION BORINGS FOR THE REFERENCED SUB—AREA. "GS" INDICATES SOILS WITH CONTAMINATION GREATER THAN 620 MG/KG BEGIN AT GROUND SURFACE.
- 4. BOTTOM OF EXCAVATION IS BASED ON LOWEST ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG OBSERVED IN DELINEATION BORINGS FOR THE REFERENCED SUB-AREA. AS-BUILT BOTTOM OF EXCAVATION CALCULATED AS AVERAGE FROM SPOT CRAPES
- 5. APPROXIMATE THICKNESS OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG IS BASED ON AVERAGE ELEVATIONS OBSERVED IN DELINEATION BORINGS FOR THE REFERENCED SUB-AREA.
- 6. ESTIMATED ELEVATION OF GROUND SURFACE BASED ON AVERAGE ELEVATION OBSERVED IN DELINEATION BORINGS FOR REFERENCED SUB—AREA.
- 7. MATERIALS CONTAINING ELEMENTAL MERCURY, AS DELINEATED ON PARSONS DEVELOPED AREA RAW FIGURE 4, ISSUED NOVEMBER 15, 2008 AND OBSERVED DURING EXCAVATION, WERE STOCK—PILED FOR OFF—SITE DISPOSAL, SEGREGATED IN A SEPARATE PILE FROM SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG. ELEMENTAL MERCURY EXCAVATION SURVEY AS—BUILT DOCUMENTATION IS PROVIDED IN APPENDIX E.
- 8. MATERIALS CONTAINING ELEMENTAL MERCURY WERE PROHIBITED FROM BEING PROCESSED IN THE SCREENING PLANT.
- 9. AREA C TARGETED POST—REMEDIATION SAMPLES WERE COLLECTED AS NOTED IN THE DEVELOPED AREA RAW. SEE REMEDIAL ACTION REPORT TABLE 3—2 FOR SUPPLEMENTAL SAMPLE RESULTS.
- 10. EXCAVATION INFORMATION TABLE AND AS-BUILT SURVEY INFORMATION COMPILED BY KENNON SURVEYING SERVICES, INC. OF WARREN, NEW JERSEY, FOR AREA D DATED AUGUST 2, 2010, AREA A DATED FEBRUARY 9, 2010, AREA C DATED DECEMBER 17, 2010, AND ADDITIONAL ELEMENTAL MERCURY EXCAVATION DATED DECEMBER 23, 2010.







SCALE: 1" = 30'

OM&M PLAN

LEGEND:

◆ AREA C POST—REMEDIATION SAMPLE

AS—BUILT LIMITS OF EXCAVATIONS

AS—BUILT LIMITS OF ELEMENTAL MERCURY EXCAVATIONS

D-1 EXCAVATION SUB—AREA ID

NO. REVISION DWN. CHK. CHK. DATE

JOB NO. 445806
CONTRACTOR'S JOB NO. ONC.
SCALE AS SHOWN

ROBERT C. SWABSIN, P.E.
20
SOM

MORTON INTERNATIONAL, INC.

100 INDEPENDENCE MALL WEST PHILADELPHIA, PA 19106-2399

JOB NO. 445806
CONTRACTOR'S JOB
NO. ______

VENTRON/VELSICOL SUPERFUND SITE OU-1
WOOD-RIDGE/CARLSTADT, NEW JERSEY
EXCAVATION LIMITS

PARSONS
200 COTTONTAIL LANE
SOMERSET, NJ 08873-1148

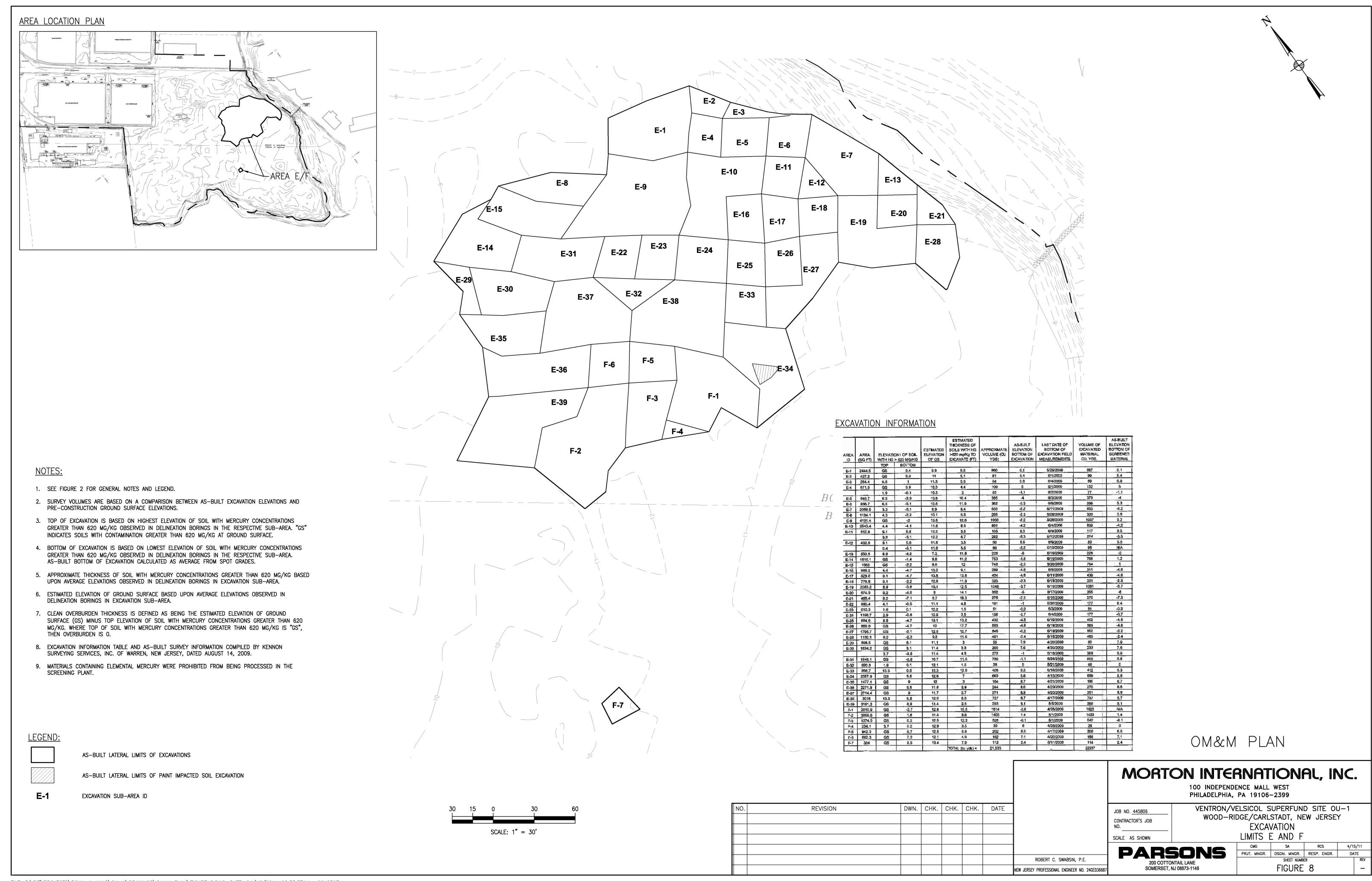
A, C, AND D

CMG SA RCS 4/15/11

PRJT. MNGR. DSGN. MNGR. RESP. ENGR. DATE

SHEET NUMBER REV

FIGURE 7



AREA LOCATION PLAN

EXCAVATION INFORMATION

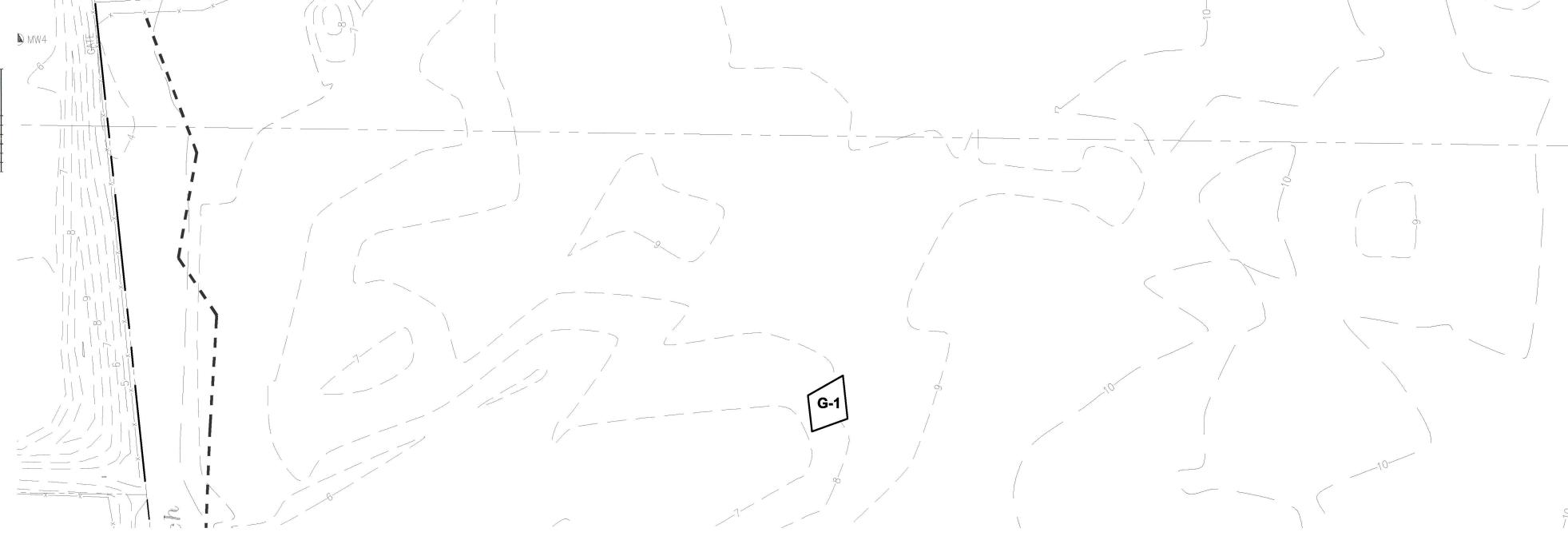
G-1	221.5	GS	3	8.7	5.7	47	2.8	8/11/2009	48	2.8
		TOP	BOTTOM					0.444.0000		
AREA ID	AREA (SQ FT)	WITH HG	ON1 OF SOIL > 620 MG/KG	ESTIMATED ELEVATION OF GS	ESTIMATED THICKNESS OF SOILS WITH HG >620 mg/Kg TO EXCAVATE (FT)	APPROXIMATE VOLUME (CU YDS)	AS-BUILT ELEVATION BOTTOM OF EXCAVATION	LAST DATE OF BOTTOM OF EXCAVATION FIELD MEASUREMENTS	VOLUME OF EXCAVATED MATERIAL CU. YDS.	AS-BUILT ELEVATION BOTTOM OF SCREENED MATERIAL

NOTES:

- 1. SEE FIGURE 2 FOR GENERAL NOTES AND LEGEND.
- 2. SURVEY VOLUMES ARE BASED ON A COMPARISON BETWEEN AS-BUILT EXCAVATION ELEVATIONS AND PRE-CONSTRUCTION GROUND SURFACE ELEVATIONS.
- 3. TOP OF EXCAVATION IS BASED ON HIGHEST ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG OBSERVED IN DELINEATION BORINGS IN THE RESPECTIVE SUB-AREA. "GS" INDICATES SOILS WITH CONTAMINATION GREATER THAN 620 MG/KG AT GROUND SURFACE.
- GREATER THAN 620 MG/KG OBSERVED IN DELINEATION BORINGS IN THE RESPECTIVE SUB-AREA. AS-BUILT BOTTOM OF ÉXCAVATION CALCULATED AS AVERAGE FROM SPOT GRADES.

4. BOTTOM OF EXCAVATION IS BASED ON LOWEST ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS

- APPROXIMATE THICKNESS OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG BASED UPON AVERAGE ELEVATIONS OBSERVED IN DELINEATION BORINGS IN EXCAVATION SUB-AREA.
- 6. ESTIMATED ELEVATION OF GROUND SURFACE BASED UPON AVERAGE ELEVATIONS OBSERVED IN DELINEATION BORINGS IN EXCAVATION SUB-AREA.
- 7. CLEAN OVERBURDEN THICKNESS IS DEFINED AS BEING THE ESTIMATED ELEVATION OF GROUND SURFACE (GS) MINUS TOP ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG. WHERE TOP OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG IS "GS", THÊN OVERBURDEN IS 0.
- 8. EXCAVATION INFORMATION TABLE AND AS-BUILT SURVEY INFORMATION COMPILED BY KENNON SURVEYING SERVICES, INC. OF WARREN, NEW JERSEY, DATED SEPTEMBER 9, 2009.
- 9. MATERIALS CONTAINING ELEMENTAL MERCURY WERE PROHIBITED FROM BEING PROCESSED AT THE SCREENING PLANT.



SCALE: 1" = 30

OM&M PLAN

LEGEND:

AS-BUILT LATERAL LIMITS OF EXCAVATIONS G-1

EXCAVATION SUB-AREA ID

REVISION DWN. CHK. CHK. CHK. DATE SCALE AS SHOWN ROBERT C. SWABSIN, P.E.

MORTON INTERNATIONAL, INC.

100 INDEPENDENCE MALL WEST PHILADELPHIA, PA 19106-2399

JOB NO. 445806 CONTRACTOR'S JOB

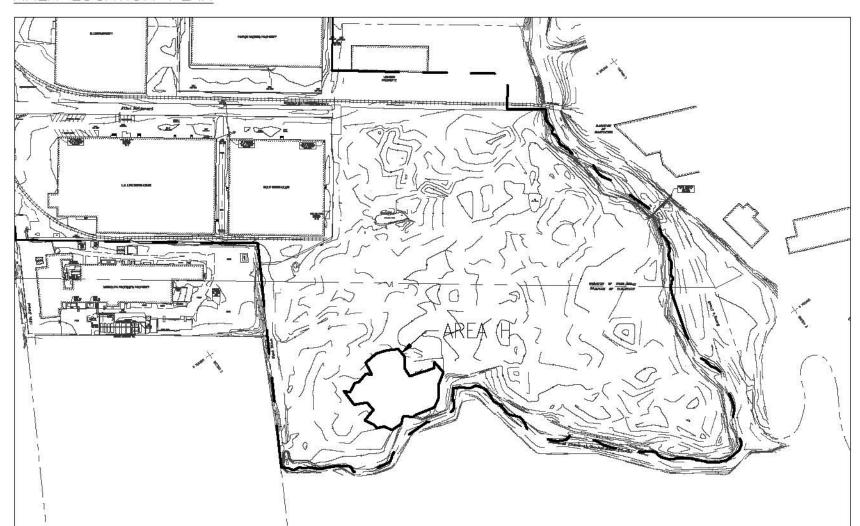
NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE036687

VENTRON/VELSICOL SUPERFUND SITE OU-1 WOOD-RIDGE/CARLSTADT, NEW JERSEY **EXCAVATION** LIMITS G

PARSONS 200 COTTONTAIL LANE SOMERSET, NJ 08873-1148

CMG SA RCS 4/15/11
PRJT. MNGR. DSGN. MNGR. RESP. ENGR. DATE FIGURE 9

AREA LOCATION PLAN



EXCAVATION INFORMATION

AREA ID	AREA (SQ FT)	ELEVATION1 OF SOIL WITH HG > 620 MG/KG		ESTIMATED ELEVATION OF GS	ESTIMATED THICKNESS OF SOILS WITH HG >620 mg/Kg TO EXCAVATE (FT)	APPROXIMATE VOLUME (CU YDS)	AS-BULT ELEVATION BOTTOM OF EXCAVATION	LAST DATE OF BOTTOM OF EXCAVATION FIELD MEASUREMENTS	VOLUME OF EXCAVATED MATERIAL CU. YDS,	AS-BUILT ELEVATION BOTTOM OF SCREENED MATERIAL
		TOP	BOTTOM							
H-1	956.1	7.9	2.4	9.2	5,5	195	2,3	8/3/2009	209	2.3
H-2	3393.9	GS	3.6	9.7	6.1	767	3,4	8/3/2009	792	3.4
H-3	539.0	GS	1.1	10.8	9.7	194	0.9	7/22/2009	197	9.0
H-4	2956.2	GS	1.3	8.9	7,6	832	1.1	7/30/2009	854	1.1
14-5	572.7	GS	2.9	10.9	8	170	2.7	7/22/2009	174	2.7
H-6	1559.6	GS	0.7	11	10.3	595	0.6	7/22/2009	600	0.9
H-7	3765.3	GS	3.1	9.5	6.4	893	2.9	7/31/2009	920	2.9
H-8	1377.3	GS	2.2	10.4	8.2	418	2	7/24/2009	428	2
H-9	2728.4	GS	-9.3	8.9	18.2	1839	-9.4	8/5/2009	1849	0,7
H-10	746.4	GS	4.5	10.3	5.8	160	4.3	8/6/2009	166	4.3
H-11	595.1	GS	4.9	8	3.1	80	4.7	7/20/2009	85	4.7
H-12	1565.4	GS	·5.3	9.1	14.4	835	-5.4	8/6/2009	841	-5.4
H-13	2779.6	GS	-0.2	7.6	7.8	803	-0.3	7/20/2009	913	1.1
H-14	1922.2	GS	3.4	7	3.6	256	3,2	10/2/2009	270	N/A
H-15	329.8	8.7	5.2	9	3.5	43	5	8/10/2009	49	5
H-16	455.7	7.9	5.4	7.8	2.5	42	5.2	8/10/2009	44	5,2
H-17	3317.2	GS	6.3	8.4	2.1	258	6.1	7/16/2009	282	6.1
H-18	840.1	GS.	8,2	10.4	2.2	58	8	7/31/2009	75	8
		1.50			TOTAL (cu yds) =	8448			8548	177

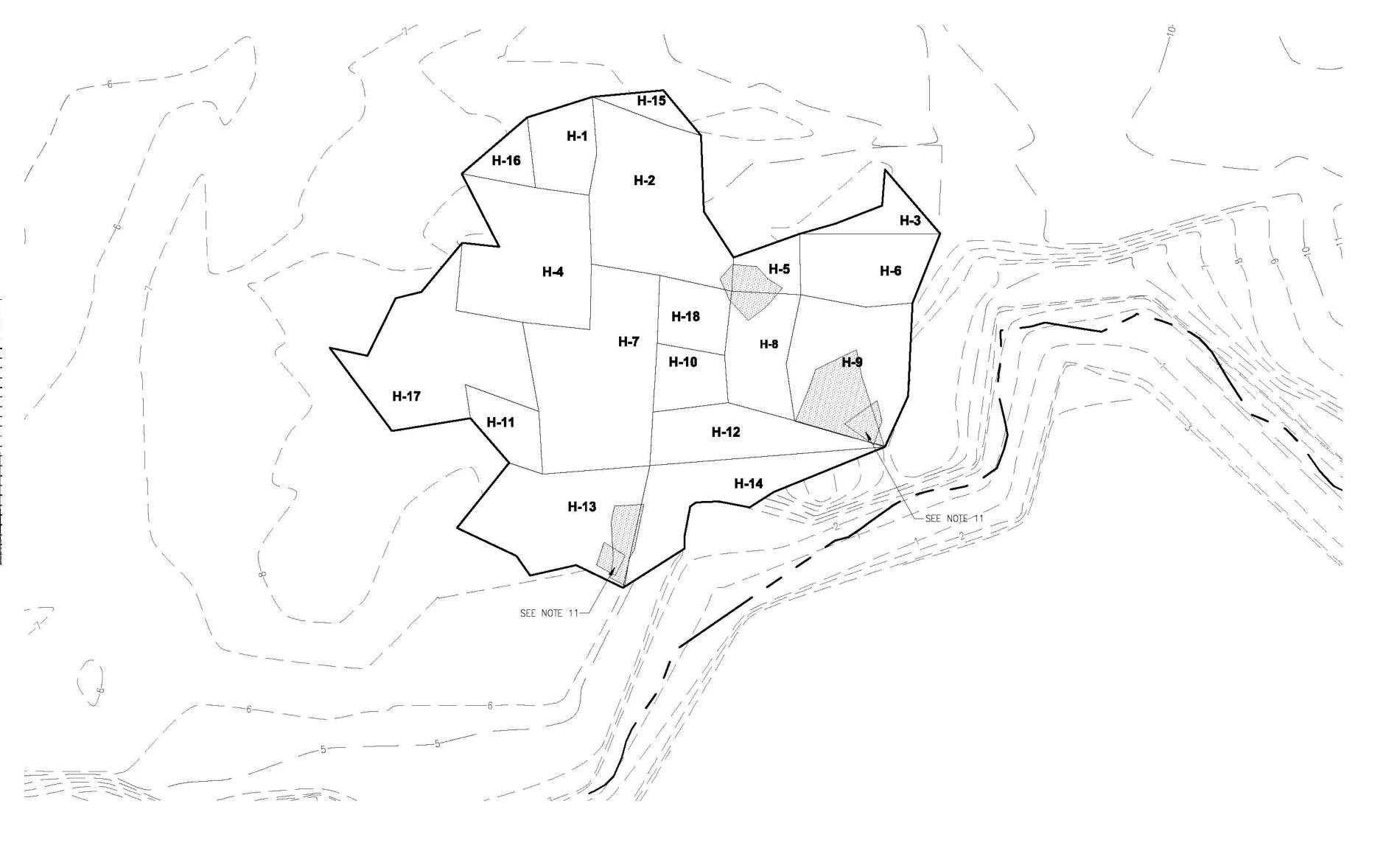
NOTES:

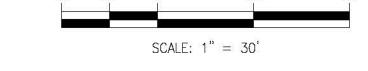
- 1. SEE FIGURE 2 FOR GENERAL NOTES AND LEGEND.
- 2. SURVEY AS-BUILT VOLUMES ARE BASED ON A COMPARISON BETWEEN AS-BUILT EXCAVATION ELEVATIONS AND PRE-CONSTRUCTION GROUND SURFACE ELEVATIONS.
- 3. TOP OF EXCAVATION IS BASED ON HIGHEST ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG OBSERVED IN DELINEATION BORINGS IN THE RESPECTIVE SUB-AREA. "GS" INDICATES SOILS WITH CONTAMINATION GREATER THAN 620 MG/KG AT GROUND SURFACE.
- 4. BOTTOM OF EXCAVATION IS BASED ON LOWEST ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG OBSERVED IN DELINEATION BORINGS IN THE RESPECTIVE SUB-AREA. AS-BUILT BOTTOM OF EXCAVATION CALCULATED AS AVERAGE FROM SPOT GRADES.
- 5. APPROXIMATE THICKNESS OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG BASED UPON AVERAGE ELEVATIONS OBSERVED IN DELINEATION BORINGS IN EXCAVATION
- 6. ESTIMATED ELEVATION OF GROUND SURFACE BASED UPON AVERAGE ELEVATIONS OBSERVED IN DELINEATION BORINGS IN EXCAVATION SUB-AREA.
- 7. CLEAN OVERBURDEN THICKNESS IS DEFINED AS BEING THE ESTIMATED ELEVATION OF GROUND SURFACE (GS) MINUS TOP ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG. WHERE TOP OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG IS "GS", THEN OVERBURDEN IS O.
- 8. MATERIALS CONTAINING ELEMENTAL MERCURY, AS DELINEATED ON PARSONS UNDEVELOPED AREA RAW FIGURE 6, ISSUED SEPTEMBER 15, 2007 AND AS OBSERVED DURING EXCAVATION WERE STOCKPILED FOR OFF-SITE DISPOSAL SEGREGATED IN A SEPARATE PILE FROM SOIL WITH MERCURY CONCENTRATIONS OF GREATER THAN 620 MG/KG. ELEMENTAL MERCURY EXCAVATION SURVEY AS-BUILT DOCUMENTATION IS PROVIDED IN APPENDIX E.
- 9. MATERIALS CONTAINING ELEMENTAL MERCURY WERE PROHIBITED FROM BEING PROCESSED IN THE SCREENING PLANT.
- 10. EXCAVATION INFORMATION TABLE AND AS-BUILT SURVEY INFORMATION COMPILED BY KENNON SURVEYING SERVICES, INC., OF WARREN, NEW JERSEY, DATED OCTOBER 8, 2009.
- 11. OVERLAPPING ELEMENTAL MERCURY HATCHING DENOTES AN AREA WHERE ELEMENTAL MERCURY WAS ENCOUNTERED IN LAYERS SEPARATED BY NON-ELEMENTAL MERCURY IMPACTED SOILS. SURVEYED ELEVATION AND VOLUME DATA PROVIDED BY KENNON SURVEYING SERVICES, INC., OF WARREN, NEW JERSEY, DATED AUGUST 10, 2009.

LEGEND:

AS-BUILT LATERAL LIMITS OF EXCAVATIONS AS-BUILT LATERAL LIMITS OF ELEMENTAL MERCURY EXCAVATIONS

EXCAVATION SUB-AREA ID





OM&M PLAN

REVISION DWN. CHK. CHK. CHK. DATE SCALE AS SHOWN ROBERT C. SWABSIN, P.E. NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE03668

MORTON INTERNATIONAL, INC.

100 INDEPENDENCE MALL WEST PHILADELPHIA, PA 19106-2399

JOB NO. 445806 CONTRACTOR'S JOB VENTRON/VELSICOL SUPERFUND SITE OU-1 WOOD-RIDGE/CARLSTADT, NEW JERSEY **EXCAVATION** LIMITS H

PARSONS 200 COTTONTAIL LANE SOMERSET, NJ 08873-1148

CMG SA RCS 4/15/11 PRJT, MNGR. DSGN. MNGR. RESP. ENGR. DATE SHEET NUMBER FIGURE 10

AREA LOCATION PLAN

EXCAVATION INFORMATION

	ADEA	F1 F144 T1	01	ESTIMATED	THICKNESS OF SOILS WITH HG	APPROXIMATE	AS-BUILT ELEVATION	LAST DATE OF BOTTOM OF	VOLUME OF EXCAVATED	AS-BUILT ELEVATION BOTTOM OF	-
AREA ID	AREA		ON1 OF SOIL	ELEVATION	>620 mg/Kg TO	VOLUME (CU	воттом оғ	EXCAVATION FIELD	MATERIAL	SCREENED	ı
AKEA ID	(SQ FT)	TOP	> 620 MG/KG	OF GS	EXCAVATE (FT)	YDS)	EXCAVATION	MEASUREMENTS	CU. YDS.	MATERIAL	ı
I-1A	510.1		воттом								t
I-1B	136.3	5.9 5.9	1.4	6.5	4.5	85	1.1	4/9/2010	102	N/A	T
I-2A	2606.7	G\$	1.4	6.7	4.5	23	1.1	4/9/2010	28	N/A	T
I-2A (DA)	1355.4	GS	1.8	7.4	5.6	822	1.7	9/15/2009	550	N/A	T
I-28	474.3	GS	1.8	7.4	7.4	281	0.9	4/9/2010	326	N/A	T
1-3A	1526.3	GS	1.8	7.6	5.8	102	0.9	4/9/2010	118	N/A	T
I-3B	555.2	GS	-1.1	6.6	7.7	435	-1.3	4/8/2010	447	N/A	t
1-4	870.3		-1.1	6.6	7.7	158	-1.2	4/8/2010	160	N/A	t
I-5	3639.2	GS GS	1	7.3	6.3	203	0.7	9/14/2009	213	N/A	t
1-6	3762.2	GS	-1.5	8.3	9.8	1321	-1.7	9/17/2009	1348	N/A	t
I-7	1890.1	GS	2.4	9.7	7.3	1017	2.3	9/21/2009	1031	N/A	t
1-8A	1280.3	GS	3.2	8.7	5.5	385	3	9/22/2009	399	N/A	Ť
1-8B	1023.3	GS	-0.3	6	6.3	299	0.6	4/7/2010	313	N/A	t
1-9	1455.4	GS	-0.3	6	6.3	239	-1.6	4/7/2010	288	N/A	t
1-9 (DA)	403.4	GS	-1.5	6.6	8.1	558	-1.6	9/14/2009	442	N/A	T
I-10	1780.5	GS	-1.5	6.6	8.1	121	-1.7	4/7/2010	124	N/A	T
I-11	3602.3	GS	-1	7.7	8.7	574	-1.1	9/17/2009	580	N/A	T
I-12	3450.2	GS	-2.1	8.2	10.3	1374	-2.2	9/18/2009	1387	N/A	T
1-12A	1222.4	5.6	-1.9	6.5	8.4	1073	-2	9/11/2009	1086	N/A	1
1-13B	586.6	5.6	0.1	6	5.5	249	-0.1	4/5/2010	276	N/A	٢
[-14	893.5		0.1	6	5.5	120	-0.3	4/5/2010	137	N/A	t
I-14	910.2	6.4 7.5	-1.2	6.4	7.6	252	-1.3	9/9/2009	255	N/A	T
-16	834.0	Christian .	-1.2	6.9	8,7	293	-1.3	9/8/2009	297	N/A	T
1-17	400.7	6.4	0.9	6.8	5.5	170	0.8	9/8/2009	185	N/A	t
I-18	2063.0	7.5	0.9	7.5	6.6	98	0.8	9/9/2009	99	N/A	-
I-19		GS	3.4	7.1	3,7	283	3.3	9/2/2009	290	N/A	T
I-20	95.3	7.5	4	8	3,5	12	3.9	9/8/2009	14	N/A	r
I-21	5617.7	GS	-0.2	7.3	7.5	1562	-0.3	9/3/2009	1583	N/A	r
1-21	857.3 913.4	GS 0.5	0.6	8.7	8.1	257	0.5	9/1/2009	260	N/A	r
I-23A		6.5	1	7.1	5.5	186	8.0	8/31/2009	213	N/A	F
1-23A (DA)	347.1 381.0	2.6	1.1	7.1	1.5	40	0.9	9/4/2009	24	N/A	-
I-23B		2.6	1.1	7.1	1.5	21	0.9	4/5/2010	25	N/A	Г
1-236	51.2 9617.0	2.6	1.1	7.1	1.5	3	0.9	4/5/2010	4	N/A	
	- 100 000000000000000000000000000000000	GS	4.8	8.5	3.7	1318	4.6	9/22/2009	1389	N/A	
1-25	886.6	GS	7	10.3	3.3	108	6.8	7/27/2009	115	N/A	Γ
1-26	491.3	GS	8.2	9.3	1.1	20	8.1	7/8/2009	22	N/A	-
1-27	780.8	GS	7	10	3	87	6.9	7/8/2009	90	N/A	-
I-28	775.3	GS	6.1	8.7	2.6	75	6	7/8/2009	77	N/A	
1-29	200.8	GS	5.9	8,2	2.3	17	5.8	9/2/2009	18	N/A	
-30	1545.3	GS	6	7.7	1.7	97	5.9	9/23/2009	103	N/A	
-31	830.8	11.5	7	11.3	4.5	138	6.8	7/28/2009	144	NA	Г
1-32	777.7	GS	7	10	3	86	6.8	9/22/2009	92	N/A	Г
1-33	2171.6	GS	7.8	8.4	0,6	48	7.7	9/22/2009	56	N/A	Г
1-34	1482.7	GS	5.8	7.9	2.1	115	5.4	9/22/2009	137	N/A	
					TOTAL (cu yds) =	14,303			14847		
					*(0)0						

I-23B

1. SEE FIGURE 2 FOR GENERAL NOTES AND LEGEND.

I-13A

2. SURVEY AS-BUILT VOLUMES ARE BASED ON A COMPARISON BETWEEN AS-BUILT EXCAVATION ELEVATIONS AND PRE-CONSTRUCTION GROUND SURFACE ELEVATIONS.

I-24

I-31

I-25

I-11

I-18

I-21

I-10

I-12

I-14

I-16

| I-15

I-17

I-34

I-33

I-22

- 3. TOP OF EXCAVATION IS BASED ON HIGHEST ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG OBSERVED IN DELINEATION BORINGS IN THE RESPECTIVE SUB-AREA. "GS" INDICATES SOILS WITH CONTAMINATION GREATER THAN 620 MG/KG AT GROUND SURFACE.
- 4. BOTTOM OF EXCAVATION IS BASED ON LOWEST ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG OBSERVED IN DELINEATION BORINGS IN THE RESPECTIVE SUB-AREA. AS-BUILT BOTTOM OF EXCAVATION CÁLCULATED AS AVERAGE FROM SPOT GRADES.
- 5. APPROXIMATE THICKNESS OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG BASED UPON AVERAGE ELEVATIONS OBSERVED IN DELINEATION BORINGS IN EXCAVATION SUB-AREA.
- 6. ESTIMATED ELEVATION OF GROUND SURFACE BASED UPON AVERAGE ELEVATIONS OBSERVED IN DELINEATION BORINGS IN EXCAVATION SUB-AREA.
- 7. CLEAN OVERBURDEN THICKNESS IS DEFINED AS BEING THE ESTIMATED ELEVATION OF GROUND SURFACE (GS) MINUS TOP ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG. WHERE TOP OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG IS "GS", THEN OVERBURDEN IS 0.
- 8. MATERIALS CONTAINING ELEMENTAL MERCURY, AS DELINEATED ON PARSONS UNDEVELOPED AREA RAW FIGURE 7, ISSUED SEPTEMBER 15, 2007 AND AS OBSERVED DURING EXCAVATION, WERE STOCKPILED FOR OFF-SITE DISPOSAL SEGREGATED IN A SEPARATE PILE FROM SOIL WITH MERCURY CONCENTRATIONS OF GREATER THAN 620 MG/KG. ELEMENTAL MERCURY EXCAVATION SURVEY AS-BUILT DOCUMENTATION IS PROVIDED IN APPENDIX
- 9. MATERIALS CONTAINING ELEMENTAL MERCURY WERE PROHIBITED FROM BEING PROCESSED IN THE SCREENING
- 10. EXCAVATION INFORMATION TABLE AND AS-BUILT SURVEY INFORMATION COMPILED BY KENNON SURVEYING SERVICES, INC. OF WARREN, NEW JERSEY, DATED APRIL 15, 2010.

REVISION DWN. CHK. CHK. CHK. DATE ROBERT C. SWABSIN, P.E. SCALE: 1" = 30'

OM&M PLAN

JOB NO. 445806 CONTRACTOR'S JOB SCALE AS SHOWN NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE036687

MORTON INTERNATIONAL, INC. 100 INDEPENDENCE MALL WEST

PHILADELPHIA, PA 19106-2399

VENTRON/VELSICOL SUPERFUND SITE OU-1 WOOD-RIDGE/CARLSTADT, NEW JERSEY **EXCAVATION**

PARSONS 200 COTTONTAIL LANE SOMERSET, NJ 08873-1148

LIMITS I
 CMG
 SA
 RCS
 4/15/11

 PRJT.
 MNGR.
 DSGN.
 MNGR.
 RESP.
 ENGR.
 DATE
 FIGURE 11

LEGEND:	
	AS-BUILT LATERAL LIMITS OF EXCAVATIONS
	AS-BUILT LATERAL LIMITS OF ELEMENTAL MERCURY EXCAVATIONS

EXCAVATION SUB-AREA ID

AREA LOCATION PLAN

EXCAVATION INFORMATION

DL-1	600.8	GS	6.1	8	1.9	42	6	9/23/2009	44	6
DL-2	1077	GS	7	9.0	2.9	116	6.5	8/12/2009	119	5.9
AREA	AREA (SQ FT)		ON1 OF SOIL > 820 MG/KG BOTTOM	ESTIMATED ELEVATION OF GS	ESTIMATED THICKNESS OF SOILS WITH HG >620 rig/Kg TO EXCAVATE (FT)	APPROXIMATE VOLUME (CU YDS)	ASBULT ELEVATION BOTTOM OF EXCAVATION	LAST DATE OF BOTTOM OF EXCAVATION FIELD MEASUREMENTS	VOLUME OF EXCAVATED MATERIAL CU. YDS.	AS-BULT ELEVATION BOTTOM OF SCREENED MATERIAL

NOTES:

- 1. SEE FIGURE 2 FOR GENERAL NOTES AND LEGEND.
- 2. SURVEY AS-BUILT VOLUMES ARE BASED ON A COMPARISON BETWEEN AS-BUILT EXCAVATION ELEVATIONS AND PRE-CONSTRUCTION GROUND SURFACE ELEVATIONS.
- TOP OF EXCAVATION IS BASED ON HIGHEST ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG OBSERVED IN DELINEATION BORINGS IN THE RESPECTIVE SUB-AREA. "GS" INDICATES SOILS WITH CONTAMINATION GREATER THAN 620 MG/KG AT GROUND SURFACE.
- 4. BOTTOM OF EXCAVATION IS BASED ON LOWEST ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG OBSERVED IN DELINEATION BORINGS IN THE RESPECTIVE SUB-AREA. AS-BUILT BOTTOM OF EXCAVATION CALCULATED AS AVERAGE FROM SPOT GRADES.
- APPROXIMATE THICKNESS OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG BASED UPON AVERAGE ELEVATIONS OBSERVED IN DELINEATION BORINGS IN EXCAVATION SUB-AREA.
- ESTIMATED ELEVATION OF GROUND SURFACE BASED UPON AVERAGE ELEVATIONS OBSERVED IN DELINEATION BORINGS IN EXCAVATION SUB-AREA.
- 7. CLEAN OVERBURDEN THICKNESS IS DEFINED AS BEING THE ESTIMATED ELEVATION OF GROUND SURFACE (GS) MINUS TOP ELEVATION OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG. WHERE TOP OF SOIL WITH MERCURY CONCENTRATIONS GREATER THAN 620 MG/KG IS "GS", THEN OVERBURDEN IS O.
- 8. EXCAVATION INFORMATION TABLE AND AS-BUILT SURVEY INFORMATION PROVIDED BY KENNON SURVEYING SERVICES, INC. OF WARREN, NEW JERSEY, DATED OCTOBER 7, 2009.
- 9. SURVEYED PIPE LOCATIONS PROVIDED BY KENNON SURVEYING SERVICES INC. OF WARREN, N.J.
- 10. FOR SPECIFIC DETAILS REGARDING THE REMOVAL OF HISTORIC PIPING FROM THE DEVELOPED AND UNDEVELOPED AREAS OF THE SITE, SEE SECTION 6.10 OF THIS REMEDIAL ACTION REPORT.

LEGEND:

AS-BUILT LATERAL LIMITS OF EXCAVATIONS

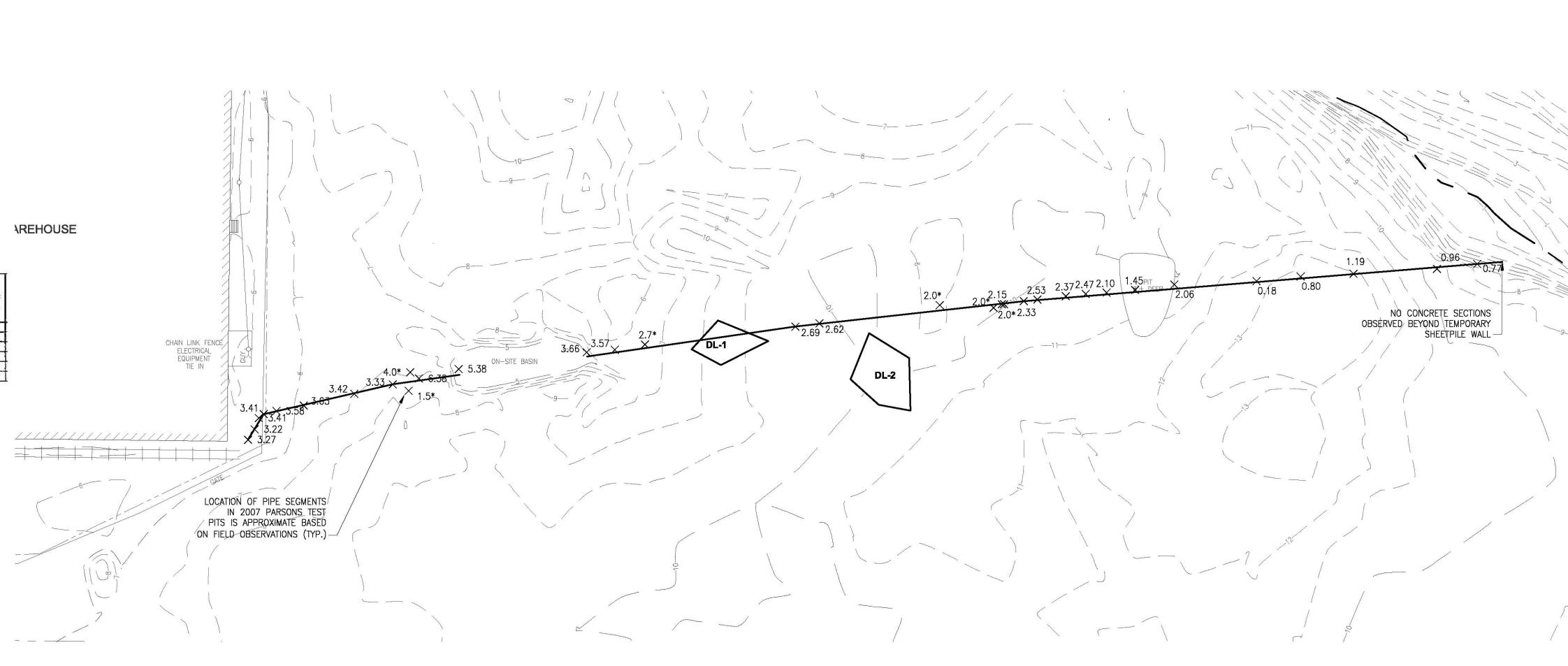
DL-1 EXCAVATION SUB-AREA ID

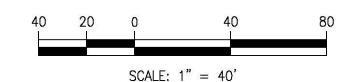
> LOCATION OF EXPOSED RCP WITH SURVEYED TOP OF EXPOSED PIPE ELEV. \times 0.77

LOCATION OF EXPOSED RCP WITH APPROXIMATE TOP OF EXPOSED PIPE

ELEVATION BASED ON FIELD OBSERVATIONS

ALIGNMENT WHERE FORMER DRAIN LINE WAS REMOVED





OM&M PLAN

REVISION DWN. CHK. CHK. CHK. DATE SCALE AS SHOWN ROBERT C. SWABSIN, P.E. NEW JERSEY PROFESSIONAL ENGINEER NO. 24GE03668

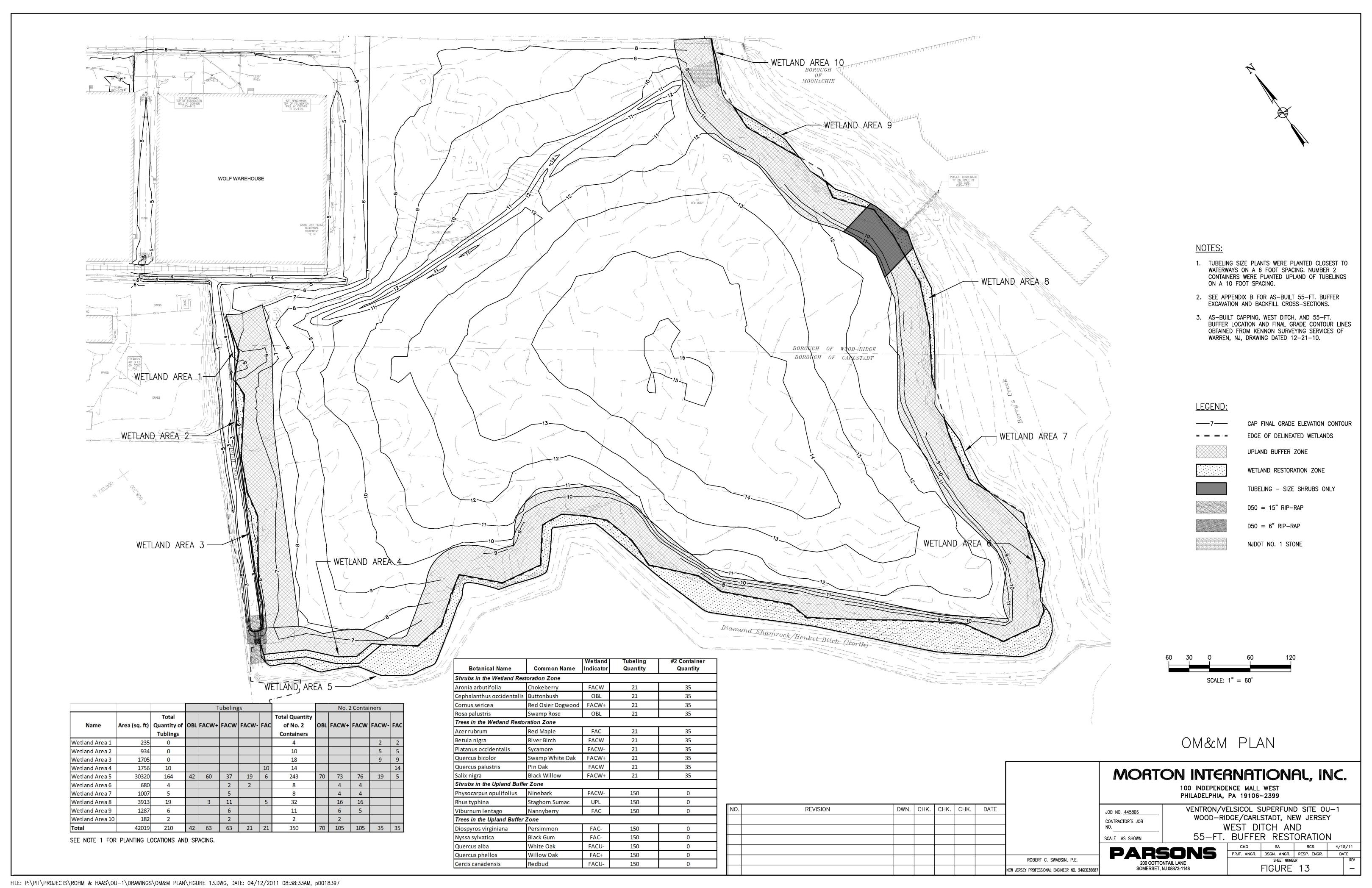
MORTON INTERNATIONAL, INC.

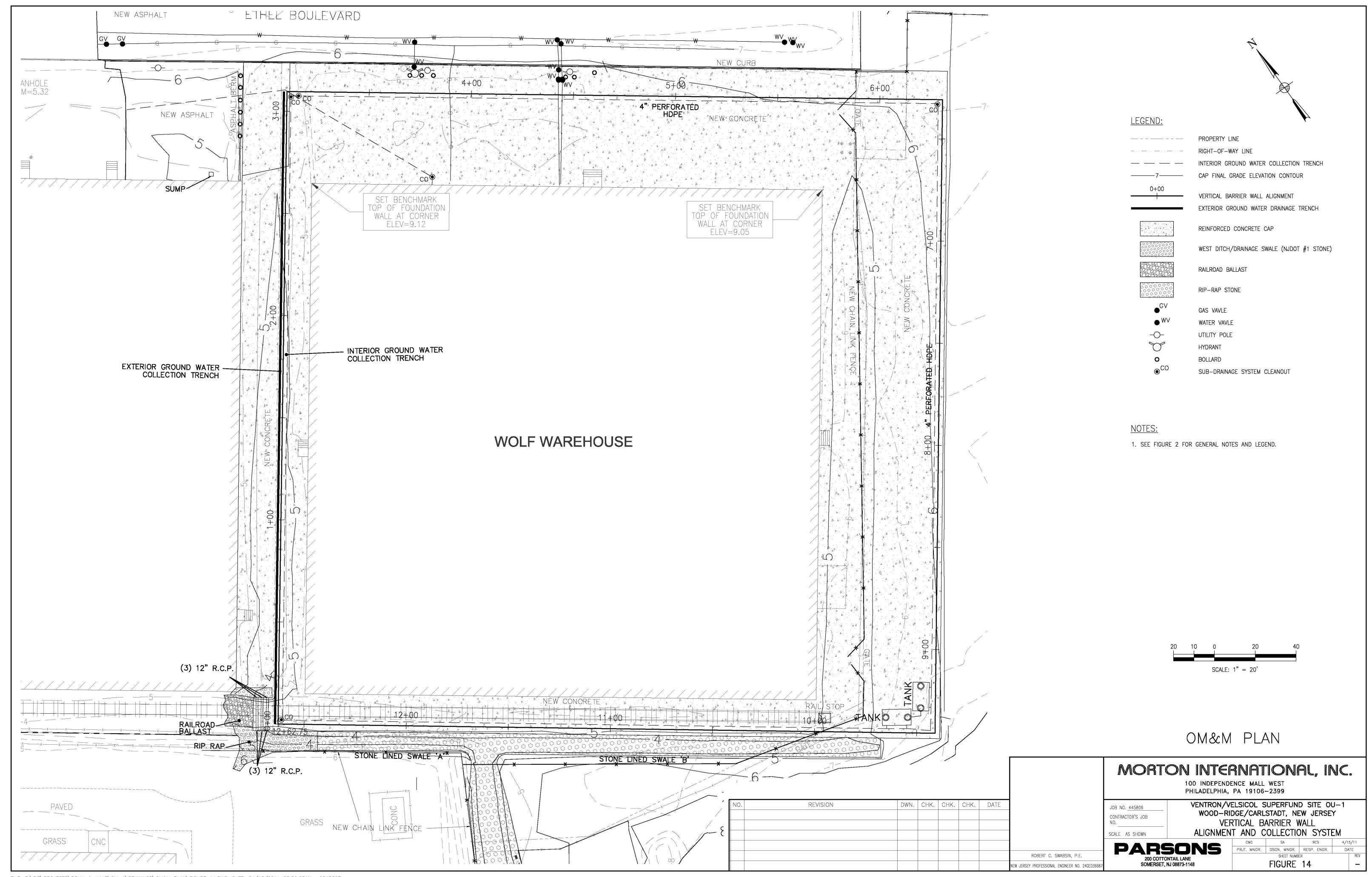
100 INDEPENDENCE MALL WEST PHILADELPHIA, PA 19106-2399

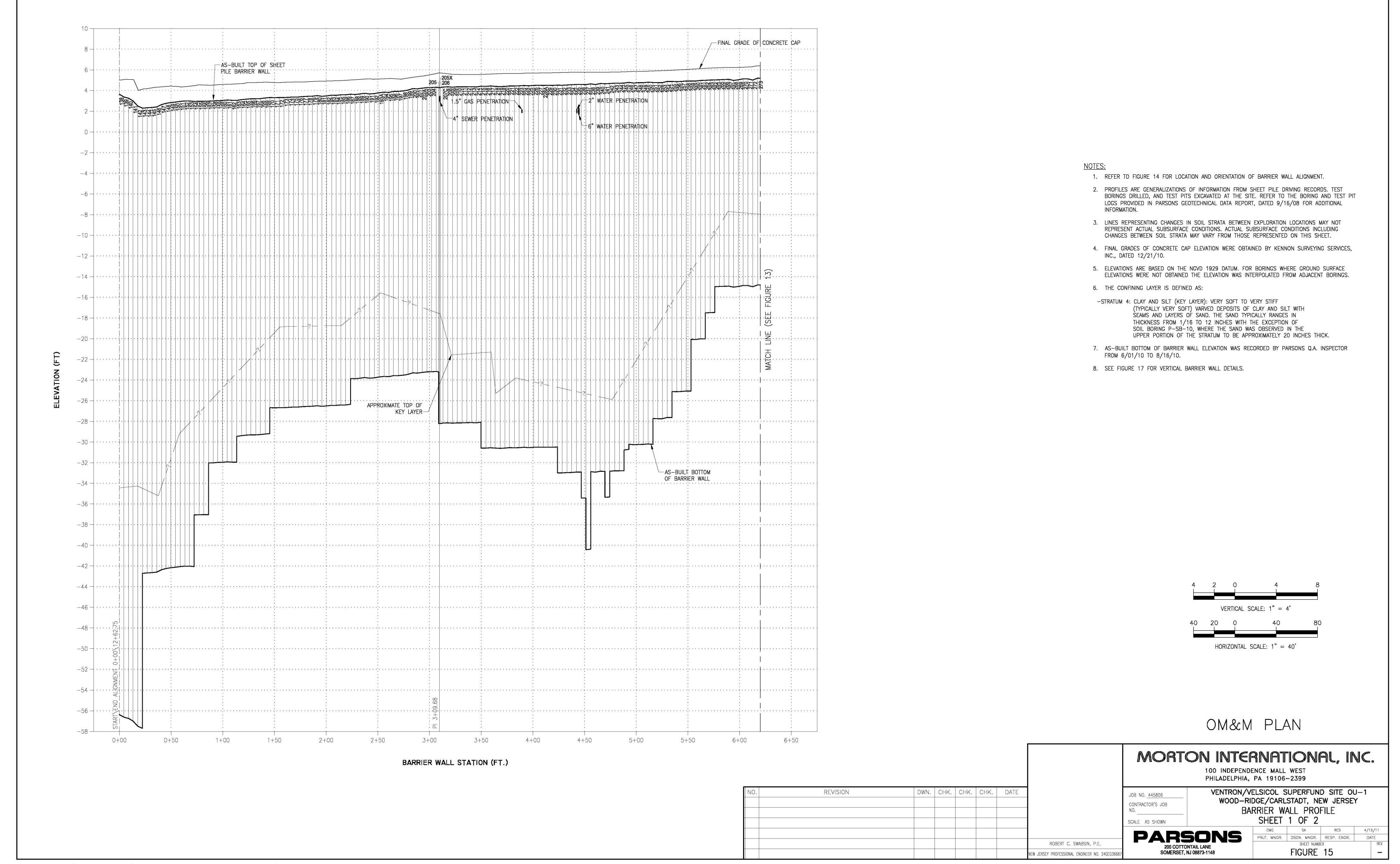
JOB NO. 445806 CONTRACTOR'S JOB VENTRON/VELSICOL SUPERFUND SITE OU-1 WOOD-RIDGE/CARLSTADT, NEW JERSEY **EXCAVATION LIMITS** OF FORMER DRAIN AREA

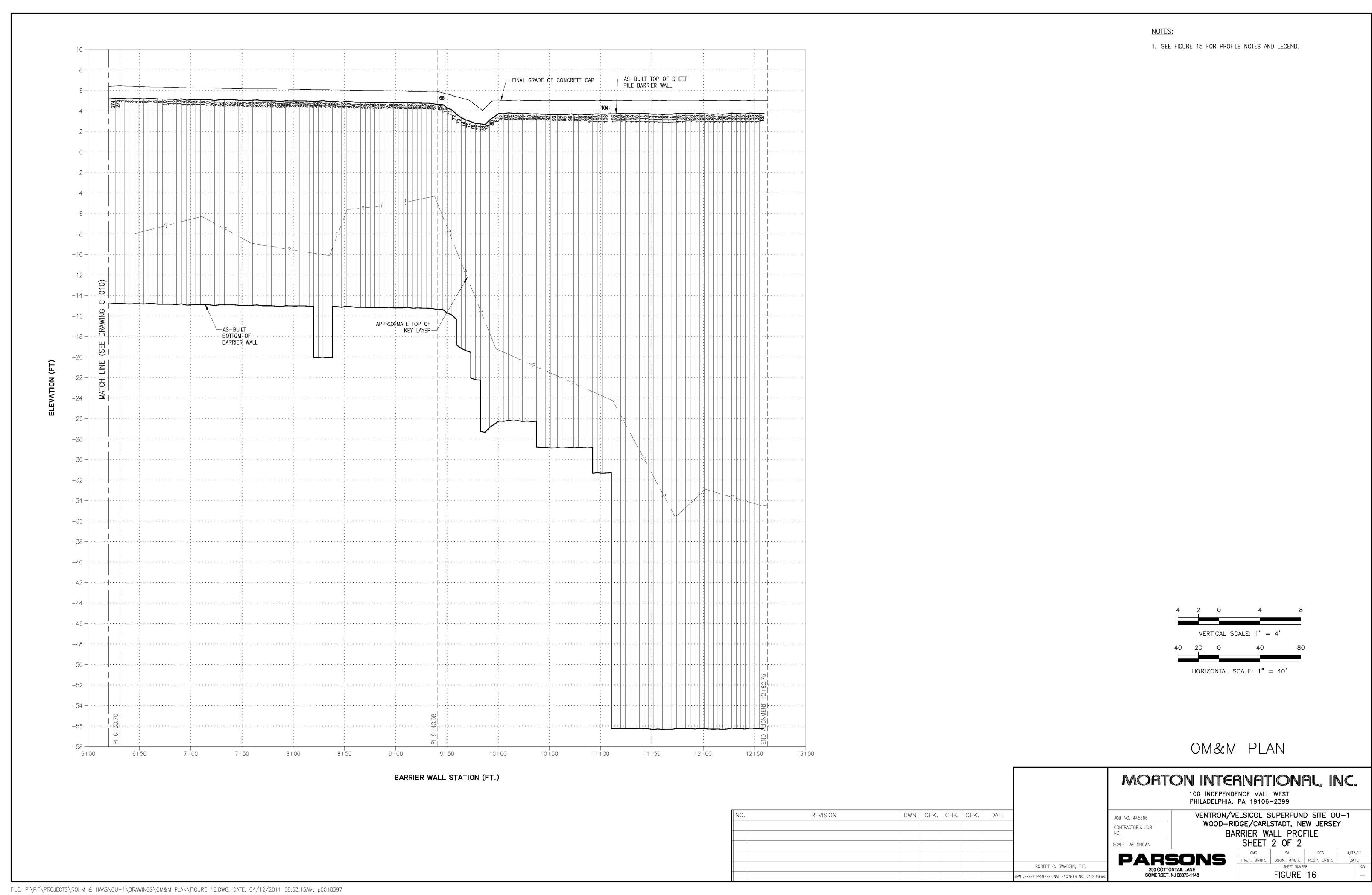
PARSONS 200 COTTONTAIL LANE SOMERSET, NJ 08873-1148

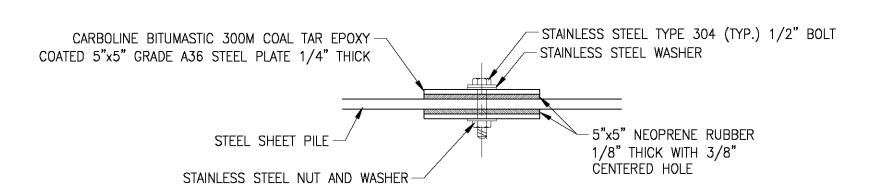
CMG SA RCS 4/15/11 PRJT. MNGR. DSGN. MNGR. RESP. ENGR. DATE SHEET NUMBER FIGURE 12



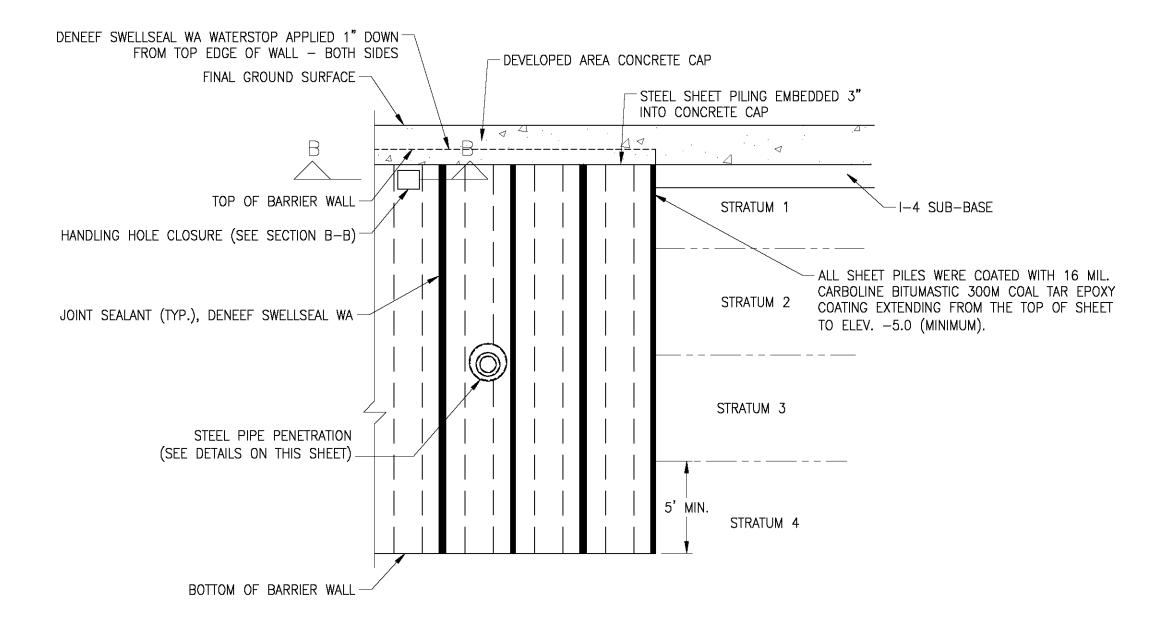




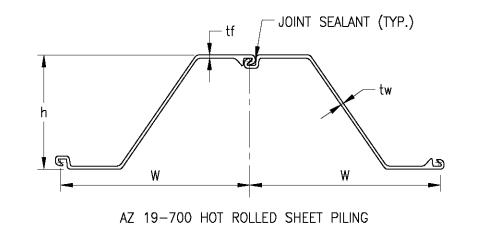




HANDLING HOLE CLOSURE SECTION B-B



BARRIER WALL PROFILE N.T.S.



SECTION PROPERTIES OF SHEET PILE (NOTE 1)

WIDTH (W)	HEIGHT (h)	THICKNESS		WEIGHT	
in	in	FLANGE (tf) in	WEB (tw) in	PILE lb/ft	WALL LB/SQ. FT
27.56	16.56	0.375	0.375	53.76	23.41

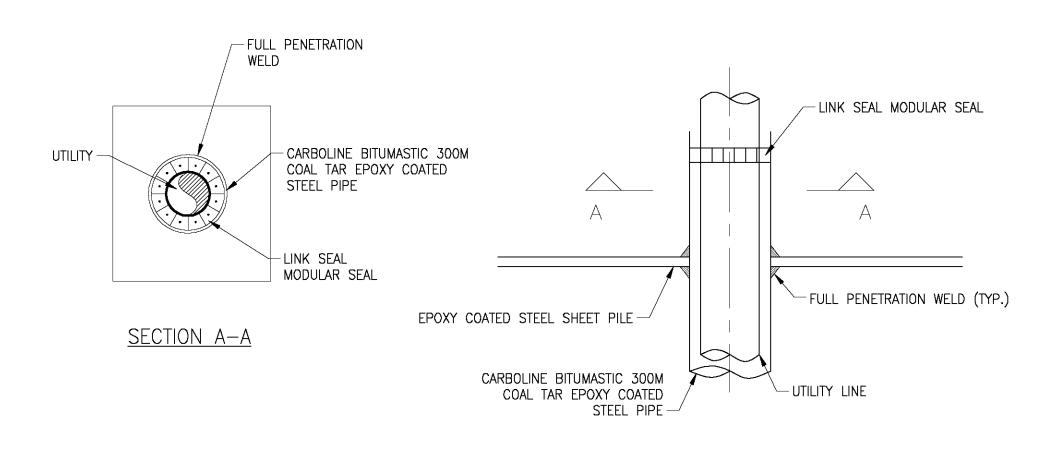
SPECIFICATIONS:

RAW MATERIAL: ASTM A572 GRADE 50

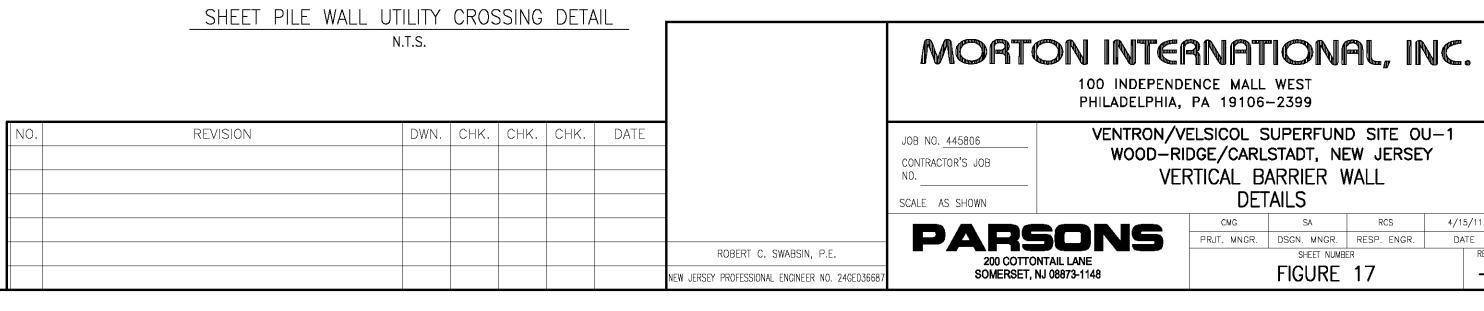
NOTE:

- 1. STEEL SHEET PILE ARE AZ-19-700 HOT ROLLED STEEL SHEETING.
- 2. THE UPPER PORTION OF ALL SHEET PILES WERE COATED WITH 16 MIL. (MINIMUM) CARBOLINE BITUMASTIC 300M COAL TAR EPOXY COATING FOR CORROSION RESISTANCE. THE UPPERMOST 10 FEET OF EACH SHEET PILE WAS COATED ON THE CRITERIA THAT THE COATING MUST EXTEND FROM THE TOP OF THE SHEET PILE WALL TO ELEVATION -5.0 (MINIMUM).
- 3. THE SHEET PILE JOINTS WERE SEALED USING DENEEF SWELLSEAL WA SEALANT SYSTEM.

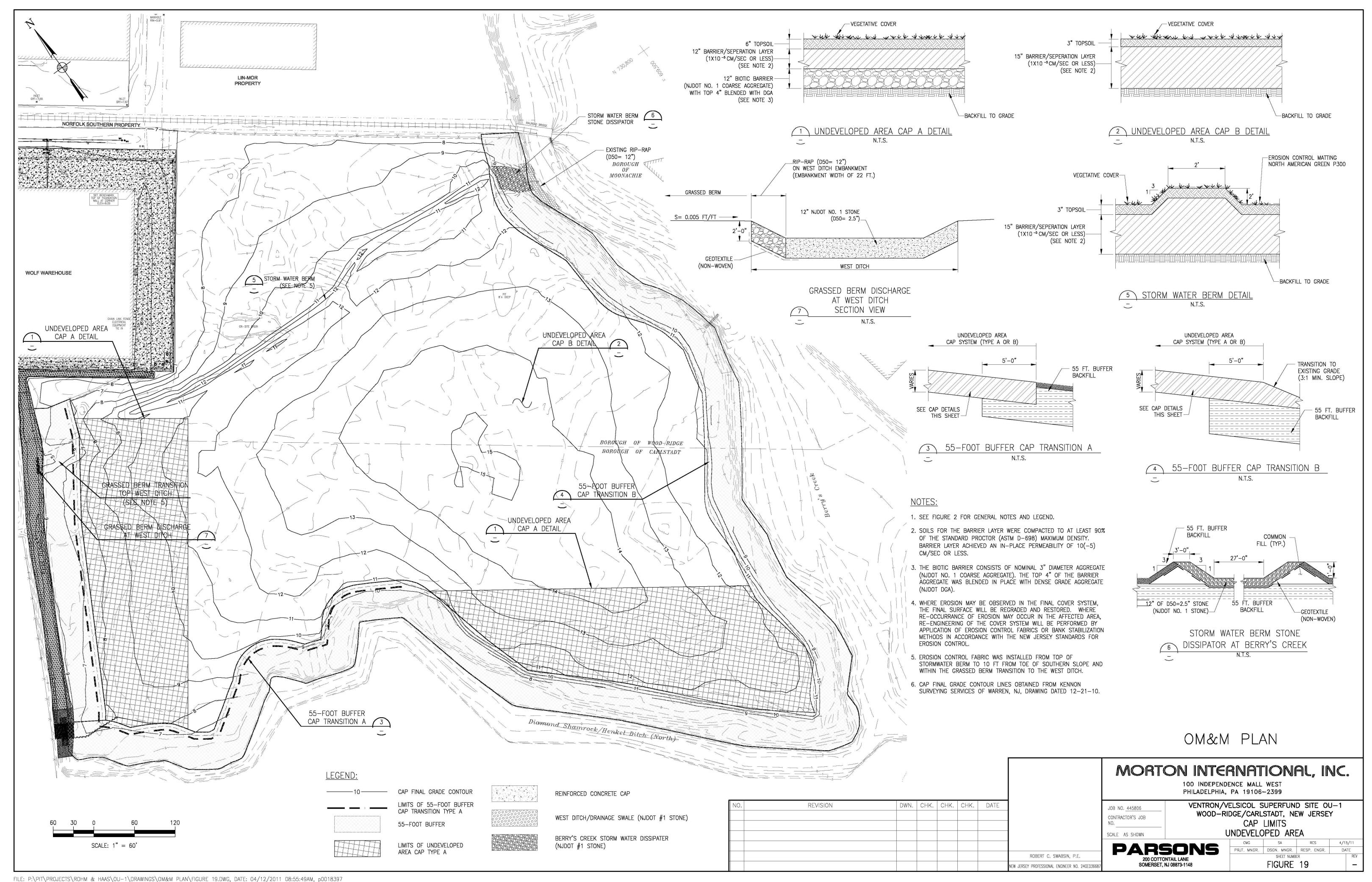
STEEL SHEET PILE DETAIL

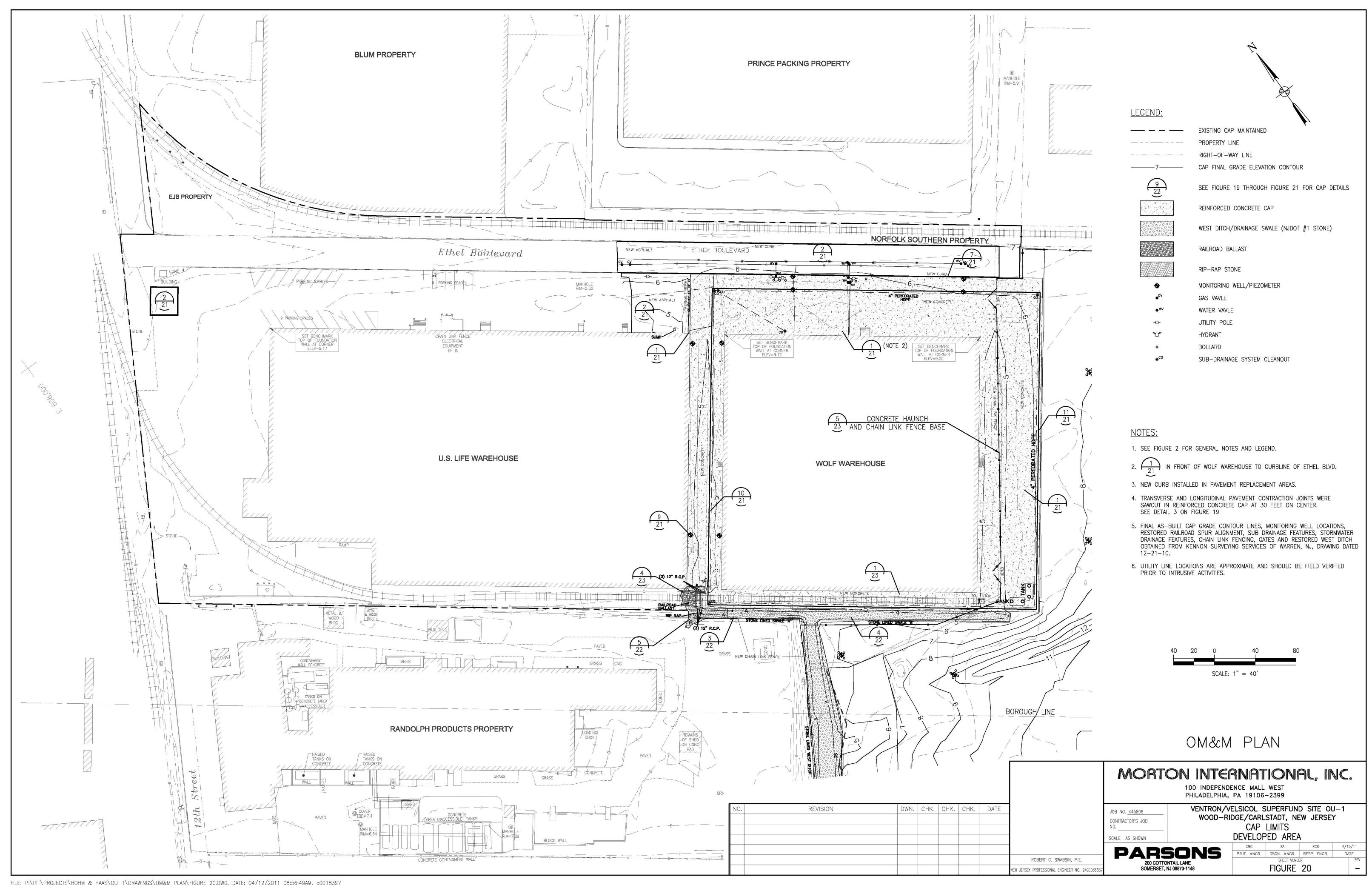


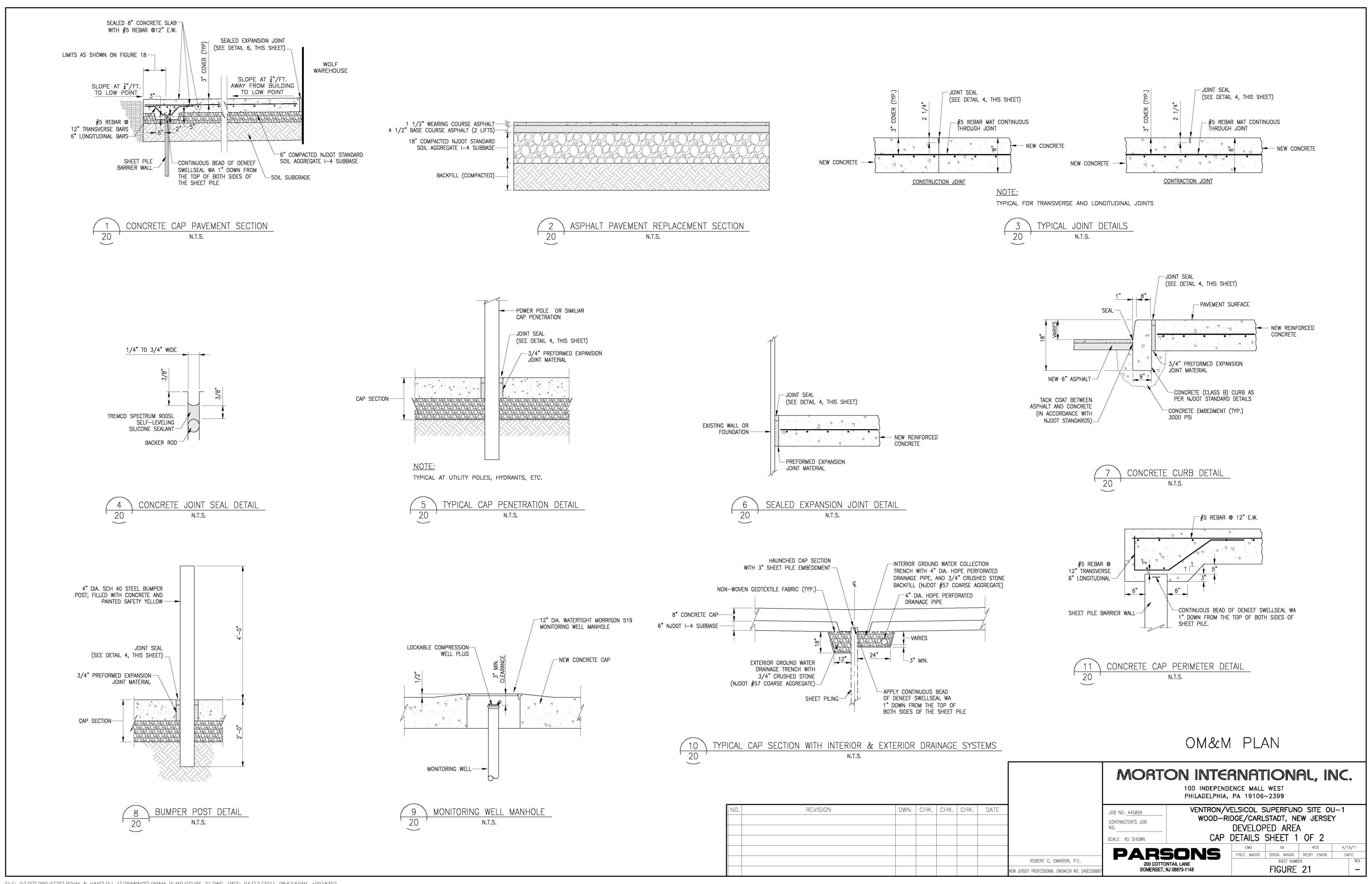
OM&M PLAN

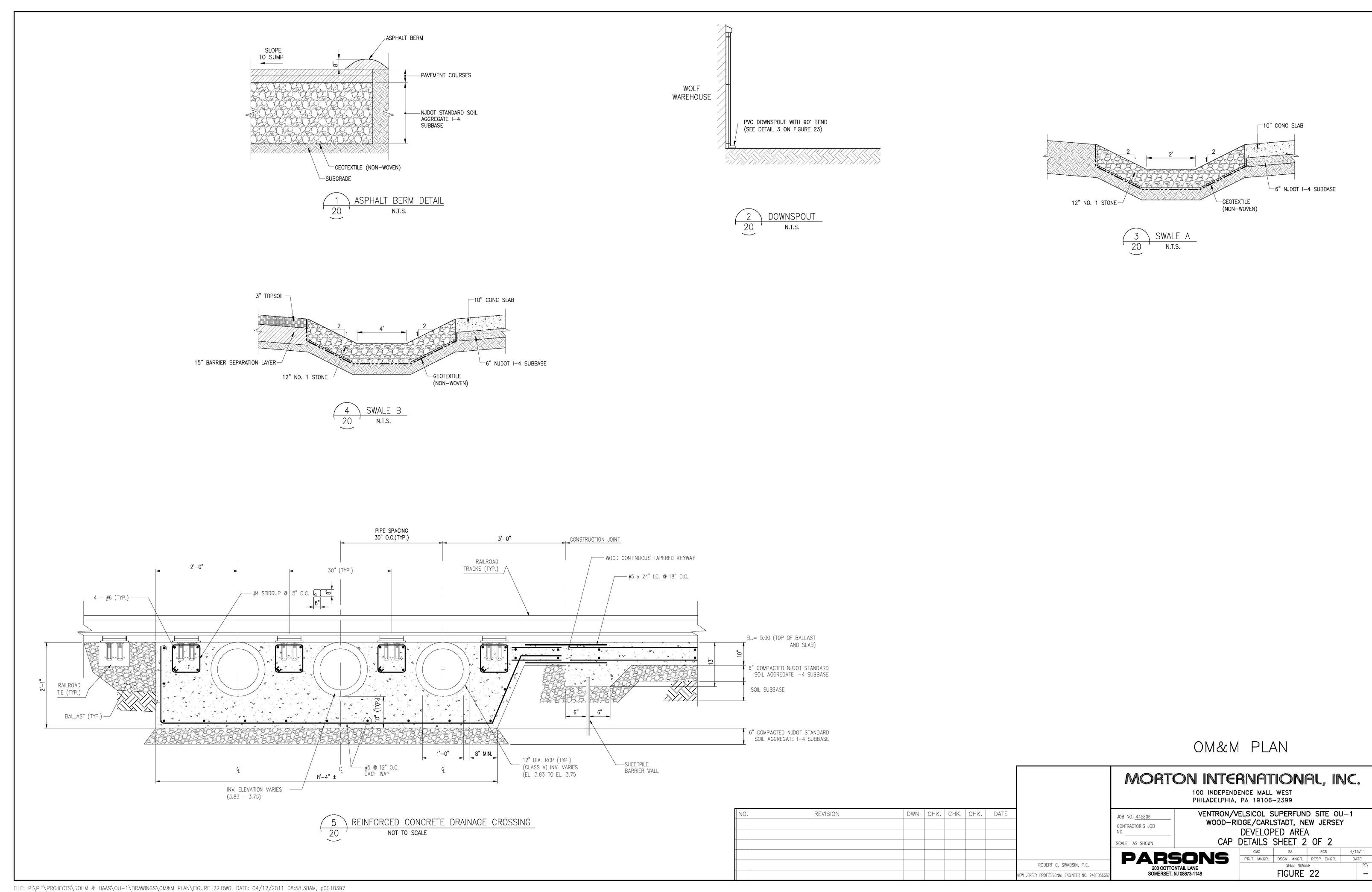


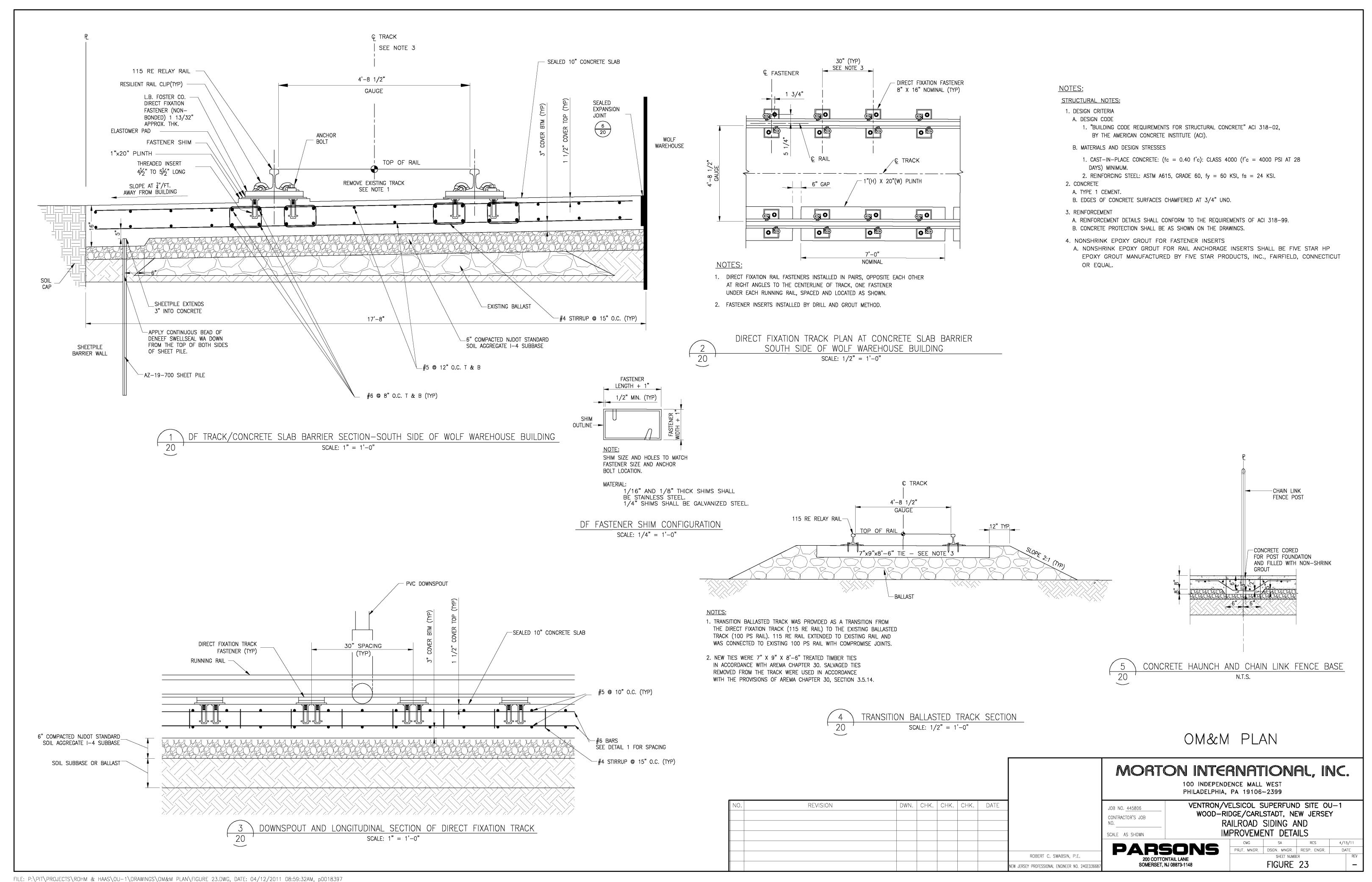




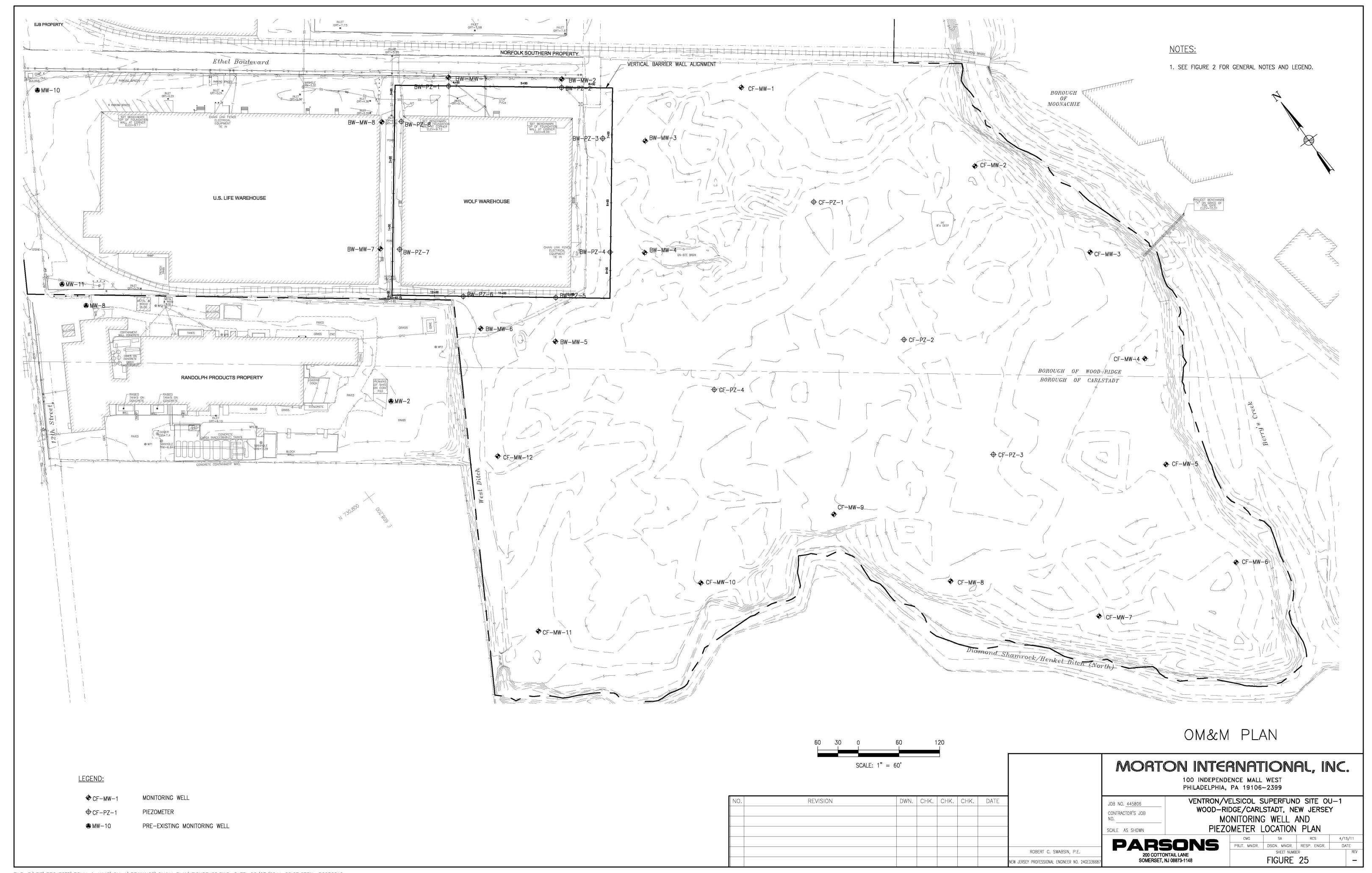


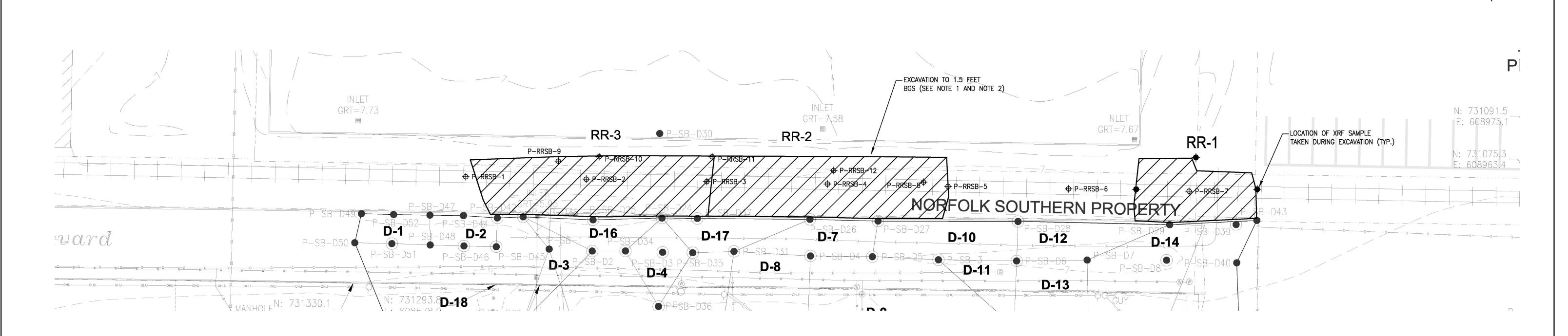












LEGEND:

♦ LOCATION OF XRF SAMPLE TAKEN DURING EXCAVATION

♦P−RRSB−1 GEOPROBE LOCATION

RR-3 CAPPING AREA NAME

●P-SB-D2 PARSONS DELINEATION BORING WITH SOIL THAT HAS MERCURY CONCENTRATIONS OF 620 MG/KG OR LESS

P-SB-D3 PARSONS DELINEATION BORING WITH SOIL THAT HAS MERCURY CONCENTRATIONS OF GREATER THAN 620 MG/KG.

AREAS TO EXCAVATE PRIOR TO CAP INSTALLATION

EXCAVATION AREA	EXCAVATION DEPTH (FEET BELOW GROUND SURFACE)	ESTIMATED ELEVATION OF GROUND SURFACE (SEE NOTE 4)
RR-1	2	6.4
RR-2	4	6.3
RR-3	2	6.3

NOTES:

- 1. EXCAVATION DEPTHS ARE LISTED IN FEET BELOW GROUND SURFACE. TOP OF RAILROAD BALLAST WAS CONSIDERED GROUND SURFACE IN AREAS WHERE BALLAST IS PRESENT.
- 2. EXCAVATION NORTH OF THE EXTENT OF RAILROAD TIES IN AREAS RR-2 AND RR-3 EXTEND TO A DEPTH OF 1.5 FEET BGS.
- 3. NORTHERN EXTENT OF EXCAVATION FOR AREAS RR-2 AND RR-3 EXTEND TO TOE OF BERM OR FENCELINE, WHICHEVER WAS ENCOUNTERED FIRST.

4. ESTIMATED ELEVATION OF GROUND SURFACE ESTABLISHED BY SURVEY OF DELINEATION BORINGS.

20 10 0 20 40

SCALE: 1"=20'

OM&M PLAN

MORTON INTERNATIONAL, INC.

100 INDEPENDENCE MALL WEST PHILADELPHIA, PA 19106-2399

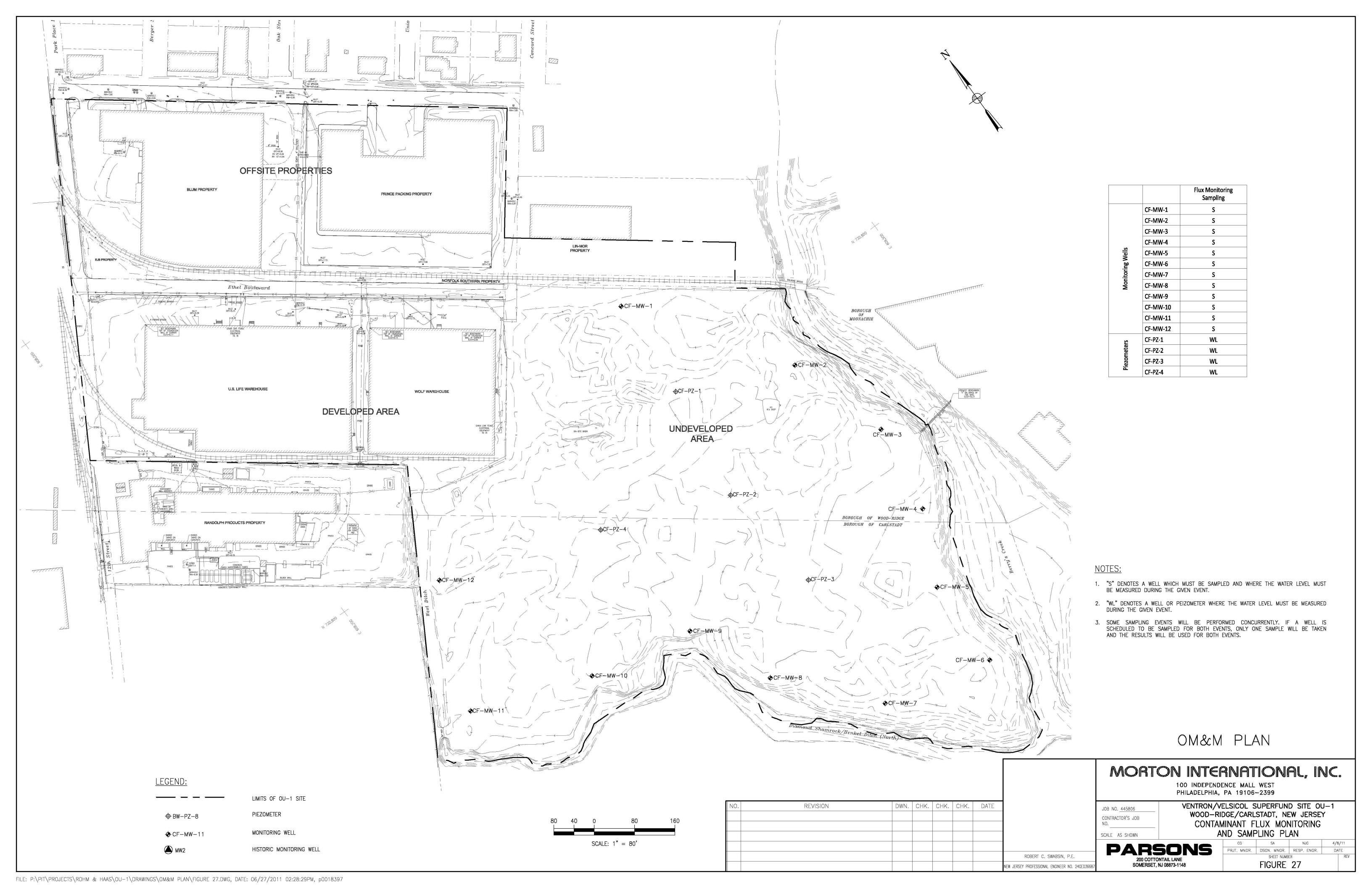
JOB NO. 445806

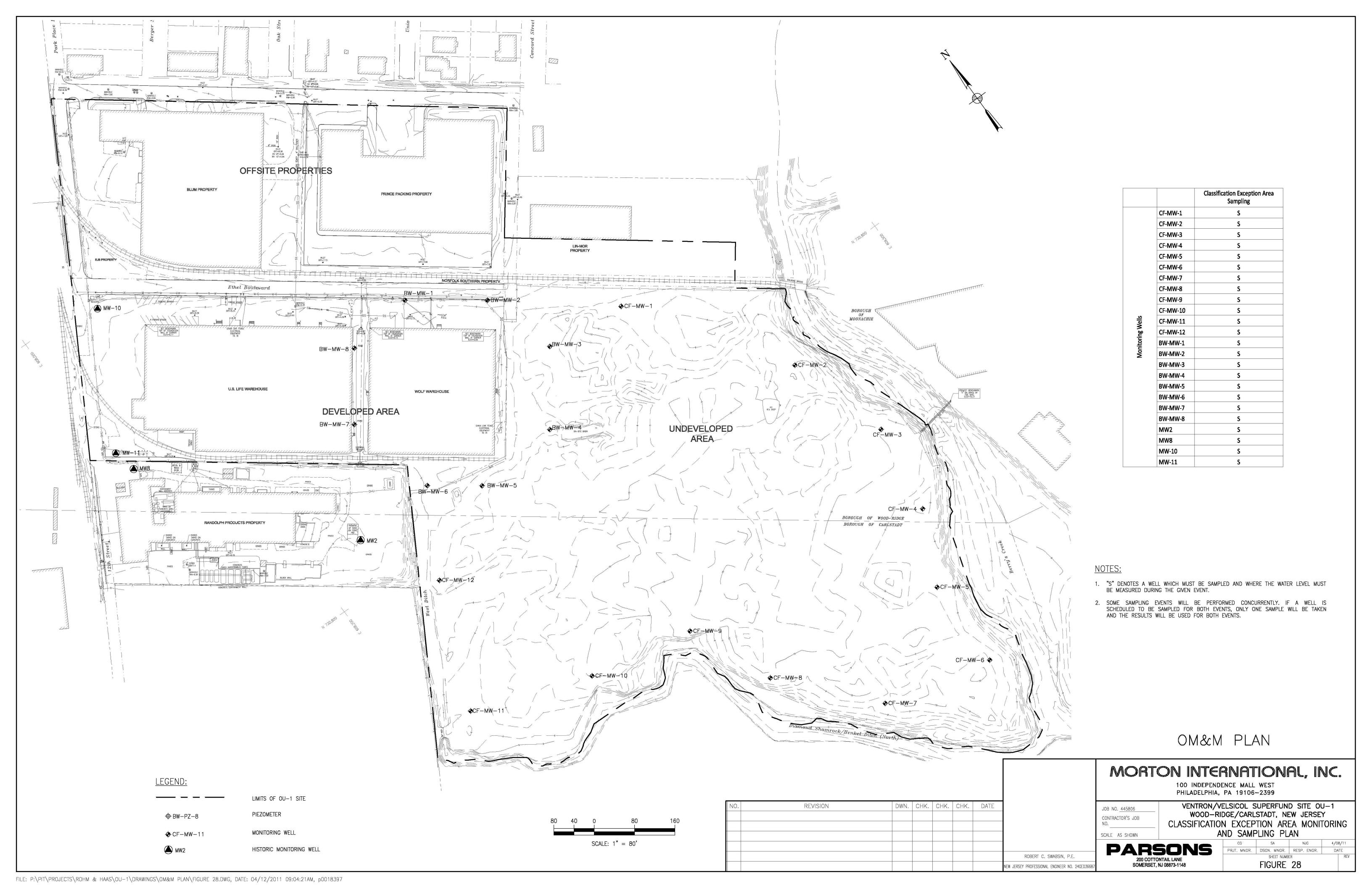
CONTRACTOR'S JOB
NO. ____

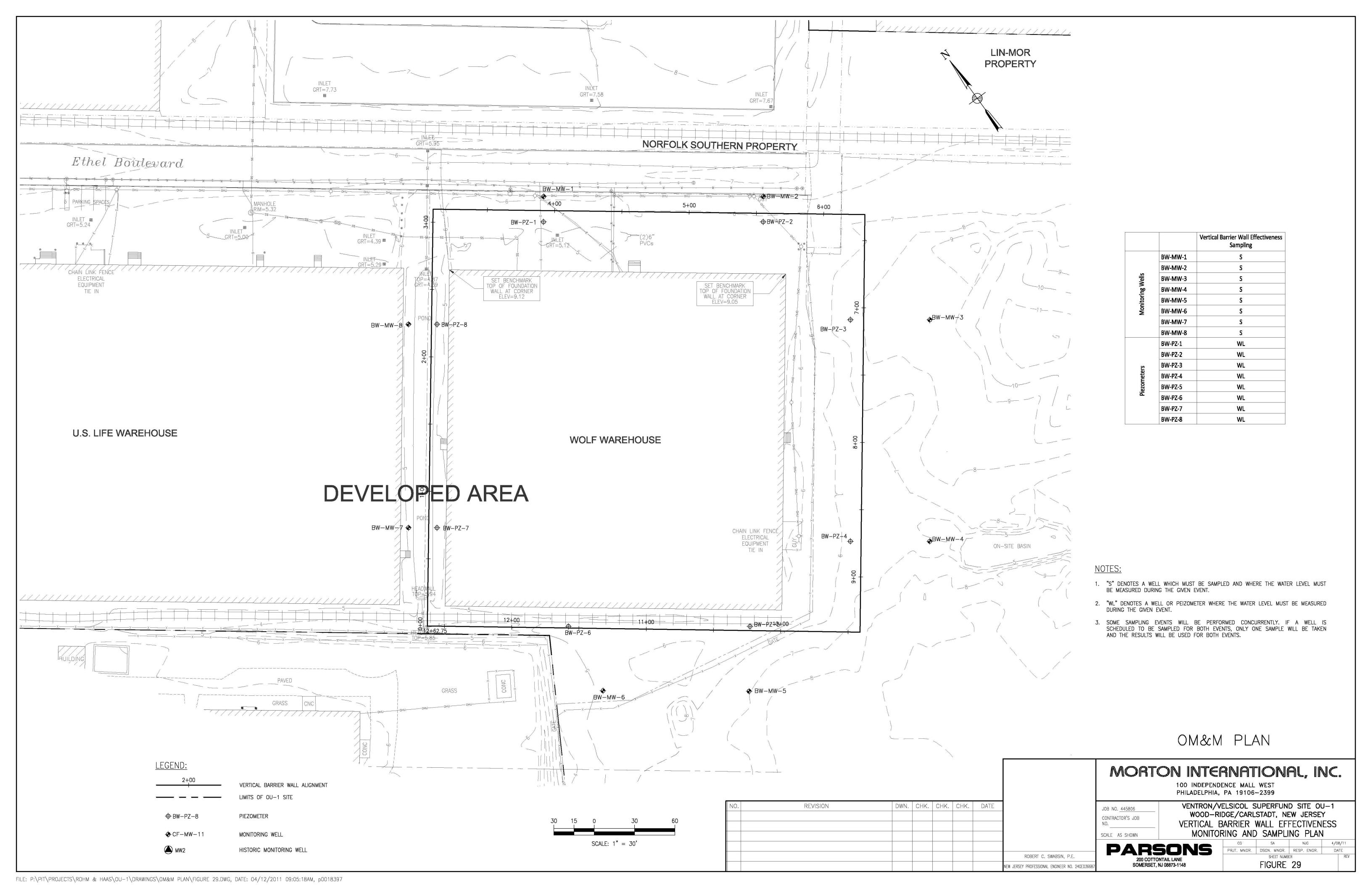
VENTRON/VELSICOL SUPERFUND SITE OU-1
WOOD-RIDGE/CARLSTADT, NEW JERSEY
NORFOLK SOUTHERN PROPERTY RAILROAD CAP
AREAS AND DELINEATION SAMPLING RESULTS

ARSONS
200 COTTONTAIL LANE
SOMERSET, NJ 08873-1148

CMG SA RCS 4/15/11
PRJT. MNGR. DSGN. MNGR. RESP. ENGR. DATE
SHEET NUMBER REV
FIGURE 26 -







APPENDIX B – INSPECTION FORMS

- 1. Operation, Maintenance, and Monitoring (OM+M) Inspection Form
- 2. Quarterly Deed Notice Inspection Form

Inspector:				
Organization:				
Date:				
Weather:				
I. Inspection Items				
Task A - General Site Inspection				
A1. General Site Conditions				
		dition		e Required
House Keeping Access Roads Signage	Acceptable:	Unacceptable:	Yes:	No:
Ethel Boulevard Randolph Products Property				
Remarks/Deficiencies:				
A2. Site Security				
	Cond	dition	Maintenand	e Required
Perimeter Chain Link Fencing Gates and Locks Ethel Boulevard Randolph Property	Acceptable:	Unacceptable:	Yes:	No:
Remarks/Deficiencies:				
A3. Erosion and Sedimentation Control See attached SWPPP Erosion and Sedim A4. Storm Water Controls	nentation Control F			
	Acceptable:	dition Unacceptable:	Maintenand Yes:	No:
Developed Area Pavement Rip-rap Swales Culverts Roof Drains				
		Щ		<u> </u>
Undeveloped Area Cap Grades Berm Rip-rap Vegetation Swales Culverts Tide Gate Valves				

OM+M Ventron/Velsicol Superfund Site Operable Unit 1

Page 1 of 5 July 2011

	Wood-R	idge and Caristadt, N	lew Jersey		
A4. Storm Water Controls (cont.)					
Type, location and extent of damage	ed stormwater control(s):			
Description of area(s) exhibiting exce	essive ponding, erosio	n, improper drainage	, blockage, an	d/or sediment bu	uildup
Task B - Developed Area Caps Ins	spection				
B1. Wolf Warehouse Concrete Ca	pping				
nspect warehouse foundation floor affects the protectiveness of the cap			ing, holes, or	deterioration tha	t
_		dition	Maintenand		
	Acceptable:	Unacceptable:	Yes:	No:	
Warehouse Floor Slah					

Type, location and extent of damage. Include dimensions:

Perimeter Concrete Cap

B2. Other Capping

Monitor general conditions of the various cap types specified below for protection against contact with underlying soils.

	Condition		Maintenand	Maintenance Required		
E ID December	Acceptable:	Unacceptable:	Yes:	No:		
EJB Property Asphalt Pavement						
U.S. Life Property Asphalt Pavement Railroad Siding Concrete Cap						
Ethel Boulevard Asphalt Pavement						
Norfolk Southern Railroad Spur Railroad Siding						
Type, location and extent of damage. I	nclude dimensions:					
Task C - Undeveloped Area Cap Ins	<u>pection</u>					
C1. Differential Settlement						
Monitor for damage attributed to settle						
<u> </u>				ckfill Required		
	Yes:	No:	Yes:	No:		
		Ш		Ш		
Type, location and extent of damage. Include dimensions and stratum of soil capping system impacted:						

C2. Burrowing Wildlife

Monitor for damage attributed to burrowing or digging wildlife. Indicators include surface penetrations, soil piles
from burrowing, irregular disturbances of shallow soils (commonly indicative of moles), and surface disturbances
such as digging indicative of larger animals (such as groundhogs).

	Disturbance	Joservea	Grading or Bac	Killi Requirea
	Yes:	No:	Yes:	No:
	Digging Wildlife	Observed	Animal Habitat	ion Observed
	Yes:	No:	Yes:	No:
Type, location and extent of disturbance. Inc	clude dimensions a	nd stratum of	soil capping syste	m impacted:
Type, recalled and extern of alcountained in			oo oappg o) oto	
C3. Undesirable Vegetation				
Monitor for undesirable trees, shrubs, and o	ther invasive speci	es (i.e. phragr	nites).	
	Invasive Species	s Observed	Removal F	Required
	Yes:	No:	Yes:	No:
Type, location, and extent of undesirable ve	detation observed:			
Type, location, and extent of undesirable ve	getation observed.			
C4. Unauthorized Vehicle or Equipment	Traffic			
Monitor for damage attributed to unauthorize	ed vehicles or equi	pment operati	ng on the soil cap	oing system.
	Damage Ob	served		
	Yes:	No:		
Type, location and extent of disturbance. Inc	clude dimensions a	nd stratum of	soil capping syste	m impacted:

Task D - Vertical Hydraulic Barrier Wall Inspection

D1. Damage from Vehicle Traffic				
Monitor for damage attributed to vehicle or equ	ipment traffic op	erating.		
	Damage Ob		Grading or Back	
	Yes:	No:	Yes:	No:
Type, location and extent of damage. Include d	limensions and	estimated ba	rrier wall stationing o	or building offsets:
D2. Differential Settlement				
Monitor for damage attributed to settlement of t	the vertical barri	er wall or cap	pping system.	
	Settlement O	bserved	Maintenance/Rep	pair Required
	Yes:	No:	Yes:	No:
Type, location and extent of damage. Include d	limensions and	estimated ba	rrier wall stationing o	or building offsets:
D3. Underground Collection Tank Level Mo	nitoring			
Tanks require water disposal coordination if fille	ed greater than	70% of capac	city.	
	Damage Ob	served		
	Yes:	No:		
Remarks/Water Level Measurements:				
D4. Monitoring Well and Piezometers				
Ground water monitoring information will be rep	oorted on the att	ached monite	orina loa	
	Solica on the att	aonoa monta	omig log.	
III. Attachments A. Photos		Yes:	No:	
Description:				
B. Sketches:		Yes:	No:	
Description:		v 🗀	🗀	
C. Supplemental Inspection Notes/Forms: Description:		Yes:	No:	
SWPPP Erosion and Sedimentation Co	ntrol Form			
			Signature	of Inspector

OM+M Ventron/Velsicol Superfund Site Operable Unit 1

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Appendix B - Quarterly Deed Notice Inspection Form Ventron/Velsicol Superfund Site Operable Unit 1 N.J.D.E.P Interest Number: NJD980529879

Organization: Date: Weather: 1. Background Site Information A. Facility Name and Location: Business Name as it appears on the Deed Notice: Current operator at the site (if different than above): Property Street Address: Municipality (-ies): County (-ies): B. Existing Site Conditions: Describe the physical characteristics of the Site. Describe the physical characteristics of the Site. II. Evaluation of Institutional and Engineering Controls: A. Zoning or Land Use Changes: Land use at the time the Deed Notice/DER was filed (check all that apply): Non-Residential: Residential: Agricultural: Other: Current land use (check all that apply): Non-Residential: Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	Inspector:	
Weather: I. Background Site Information A. Facility Name and Location: Business Name as it appears on the Deed Notice:	Organization:	
I. Background Site Information A. Facility Name and Location: Business Name as it appears on the Deed Notice: Current operator at the site (if different than above): Property Street Address: Municipality (-ies): County (-ies): B. Existing Site Conditions: Describe the physical characteristics of the Site. Describe the current site operations. II. Evaluation of Institutional and Engineering Controls: A. Zoning or Land Use Changes; Land use at the time the Deed Notice/DER was filed (check all that apply): Non-Residential: Residential: Agricultural: Other: Current land use (check all that apply): Non-Residential: Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	Date:	
A. Facility Name and Location: Business Name as it appears on the Deed Notice: Current operator at the site (if different than above): Property Street Address: Municipality (-ies): County (-ies): B. Existing Site Conditions: Describe the physical characteristics of the Site. Describe the current site operations. II. Evaluation of Institutional and Engineering Controls: A. Zoning or Land Use Changes: Land use at the time the Deed Notice/DER was filed (check all that apply): Non-Residential: Residential: Current land use (check all that apply): Non-Residential: Residential: Residential: Agricultural: Other: S. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	Weather:	
Current operator at the site (if different than above): Property Street Address: Municipality (-ies): County (-ies): B. Existing Site Conditions: Describe the physical characteristics of the Site. Describe the physical characteristics of the Site. II. Evaluation of Institutional and Engineering Controls: A. Zoning or Land Use Changes: Land use at the time the Deed Notice/DER was filed (check all that apply): Non-Residential: Residential: Agricultural: Other: Current land use (check all that apply): Non-Residential: Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?		
Property Street Address: Municipality (-ies): County (-ies): B. Existing Site Conditions: Describe the physical characteristics of the Site. Describe the physical characteristics of the Site. Describe the current site operations. II. Evaluation of Institutional and Engineering Controls: A. Zoning or Land Use Changes: Land use at the time the Deed Notice/DER was filled (check all that apply): Non-Residential: Residential: Agricultural: Other: Current land use (check all that apply): Non-Residential: Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	Business Name as it appears on the Deed Notice:	
Municipality (-ies): B. Existing Site Conditions:	Current operator at the site (if different than above):	
B. Existing Site Conditions: Describe the physical characteristics of the Site. Describe the physical characteristics of the Site. Describe the current site operations. II. Evaluation of Institutional and Engineering Controls: A. Zoning or Land Use Changes: Land use at the time the Deed Notice/DER was filed (check all that apply): Non-Residential: Residential: Agricultural: Other: Current land use (check all that apply): Non-Residential: Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	Property Street Address:	
B. Existing Site Conditions: Describe the physical characteristics of the Site. Describe the physical characteristics of the Site. Describe the current site operations. II. Evaluation of Institutional and Engineering Controls: A. Zoning or Land Use Changes: Land use at the time the Deed Notice/DER was filed (check all that apply): Non-Residential: Residential: Agricultural: Other: Current land use (check all that apply): Non-Residential: Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	Municipality (-ies):	
Describe the physical characteristics of the Site. Describe the current site operations. II. Evaluation of Institutional and Engineering Controls: A. Zoning or Land Use Changes: Land use at the time the Deed Notice/DER was filed (check all that apply): Non-Residential: Residential: Agricultural: Other: Current land use (check all that apply): Non-Residential: Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	County (-ies):	
II. Evaluation of Institutional and Engineering Controls: A. Zoning or Land Use Changes: Land use at the time the Deed Notice/DER was filed (check all that apply): Non-Residential: Residential: Agricultural: Other: Current land use (check all that apply): Non-Residential: Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?		
A. Zoning or Land Use Changes: Land use at the time the Deed Notice/DER was filed (check all that apply): Non-Residential: Residential: Agricultural: Other: Current land use (check all that apply): Non-Residential: Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	Describe the current site operations.	
Non-Residential: Residential: Agricultural: Other: Current land use (check all that apply): Non-Residential: Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	A. Zoning or Land Use Changes:	
Current land use (check all that apply): Non-Residential: Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	Land use at the time the Deed Notice/DER wa	as filed (check all that apply):
Non-Residential: Agricultural: Other: B. Excavations and Disturbances: Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	Non-Residential: Residential:	Agricultural: Other:
Has any excavation or other disturbance activity taken place within the restricted area which has resulted in unacceptable exposure to soil or ground water contamination?	Non-Residential: Residential:	Agricultural: Other:
Yes: No:	Has any excavation or other disturbance activity taken place	
	Yes: No:	

OM+M Ventron/Velsicol Superfund Site Operable Unit 1

Appendix B - Quarterly Deed Notice Inspection Form Ventron/Velsicol Superfund Site Operable Unit 1

B. Excavations and Disturbances (cont.): N.J.D.E.P Interest Number: NJD980529879

If yes answered above: Description of the disturbance and methods to addres	ss the disturbance:	
Party (-ies) responsible for the disturbance:		
C. Remarks: For environmental control inspection notes see Parso regarding disturbances to other institutional controls (observations which may affect the integrity of the Dec	(i.e. groundwater mon	
III. Attachments		
A. Photos Description:	Yes:	No:
B. Sketches: Description:	Yes:	No:
C. Supplemental Inspection Notes/Forms: Description: (Parsons OM&M Form)	Yes:	No:
		Signature of Inspector

OM+M Ventron/Velsicol Superfund Site Operable Unit 1

APPENDIX C – QUALITY ASS URANCE PROJECT PLAN

Operation, Maintenance, and Monitoring Plan for Engineering and Institutional Controls Appendix C – Quality Assurance Project Plan for

Ventron/Velsicol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

(USEPA No. NJD980529879)

July 2011

Prepared for:

Morton International, Inc.

Prepared by:

PARSONS

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List of Acronyms and Abbreviations

ASTM American Society for Testing and Materials

CCB Continuing Calibration Blank
CLP Contract Laboratory Program

COC Chain-of-Custody

CQAI Construction Quality Assurance Inspector
CQCI Construction Quality Control Inspector

CRG Corporate Remediation Group
DAR Data Acceptability Review
DQO Data Quality Objective
DUA Data Usability Assessment

EQuIS Environmental Quality Information System

FSPM Field Sampling Procedures Manual

GC/MS Gas Chromatography/ Mass Spectrometry

HSO Health and Safety Officer
ICB Initial Calibration Blank
ICV Initial Calibration Verification

LD Laboratory Duplicates
LCS Laboratory Control Sample
MDL Method Detection Limit

MS/MSD Matrix Spike/Matrix Spike Duplicate

NIST National Institute of Standards and Technology

N.J.A.C. New Jersey Administrative Code

NJDEP New Jersey Department of Environmental Protection

OM&M Operation, Maintenance, and Monitoring

PE Performance Evaluation
POL Practical Quantitation Limit

PARCC Precision, Accuracy, Representativeness, Comparability, and

Completeness

QA Quality Assurance

QAPP Quality Assurance Project Plan
QA/QC Quality Assurance/ Quality Control

QC Quality Control

RAW Remedial Action Workplan

RDCSCC Residential Direct Contact Soil Cleanup Criteria
RDCSRS Residential Direct Contact Soil Remediation Standard

ROD Record of Decision

RPD Relative Percent Difference
SMP Symmetric Multi-Processor
SOP Standard Operating Procedure
SRP Site Remediation Program

SVOC Semivolatile Organic Compound

TAL Target Analyte List

List of Acronyms and Abbreviations (cont.)

TBD To be Determined TCL Target Compound List

USEPA U.S. Environmental Protection Agency

VOC Volatile Organic Compound

Section 1 – Introduction

The Quality Assurance Project Plan (QAPP) for the Ventron/Velsicol Superfund Site, Operable Unit 1 (OU-1) ("Site"), located in Wood-Ridge and Carlstadt, New Jersey, was prepared on behalf of Morton International, Inc. (Rohm and Haas Chemicals, LLC is a successor-in-interest to certain liabilities of Morton, (hereinafter, collectively "Morton") with the assistance of ENVIRON International Corporation (ENVIRON), the environmental consultant for the Custodial Trust. The Custodial Trust is a trust established pursuant to an order entered on August 9, 2002 by United States Bankruptcy Court approving the formation of the Custodial Trust and Settlement Agreement in the United States Bankruptcy Court for the District of Delaware, *In Re Fruit of the Loom, Inc.* (No. 99-4497). The QAPP was prepared in accordance with the New Jersey Department of Environmental Protection (NJDEP) Technical Requirements for Site Remediation, N.J.A.C. 7:26E-6.2, and the NJDEP Field Sampling Procedures Manual (FSPM).

This QAPP provides a plan to perform operation, maintenance, and monitoring (OM&M) in accordance with the Undeveloped and Developed Area Remedial Action Workplans and to meet established sample integrity and quality objectives. The QAPP will be modified during OM&M operations as necessary.

1.1 Project Objectives

The objective of OM&M is to perform work activities that will maintain controls to prevent/minimize human and ecological receptors' exposure with contaminants in soil and ground water to within acceptable risk levels. This objective will be achieved through the implementation of engineering and institutional controls. Quality assurance and quality control (QA/QC) measures will be implemented during OM&M.

The work activities relevant to this QAPP include:

- Visual inspection and documentation;
- Ground water sampling and water level measurement;
- Indoor air sampling; and
- Data analysis, review, and interpretation.

The remediation goals for soil and groundwater are listed in **Tables 1** and **2**.

1.2 QAPP Organization

The QAPP is organized as follows:

- Section 1 Introduction;
- Section 2 Project Management;
- Section 3 Construction Oversight;
- Section 4 Analytical Procedures; and
- Section 5 References.

A description of the Site, the Site history, Site background, and a description of the Site-related contamination are provided in the Developed Area Remedial Action Workplan (RAW).

Section 2 – Project Management

The project team responsible for the implementation and quality of this program consists primarily of the following parties:

- Regulatory Agencies United States Environmental Protection Agency (USEPA) and NJDEP;
- Morton International, Inc; and
- OM&M Contractor Parsons.

A chain of command will be established for communication and decisive decision-making. An organizational chart of the OM&M team will be assembled prior to implementation. A preliminary project management organization chart is presented in **Figure 1**.

2.1 Roles and Responsibilities

The roles and responsibilities of the selected parties and key project-level personnel involved with the remedial action construction are described below.

2.1.1 Regulatory Agencies

USEPA and NJDEP

Oversight of the remediation requirements at this Site is being conducted jointly by the USEPA (primacy) and NJDEP. The USEPA is the lead agency on this project, but is required to coordinate with the NJDEP, as necessary.

Other Agencies

The boroughs of Wood-Ridge and Carlstadt, Bergen County, and other agencies may become involved in the project in some capacity, depending on permitting requirements and the potential redevelopment that may occur.

2.1.2 Morton International, Inc.

Morton, with the assistance of ENVIRON International Corporation (ENVIRON), the environmental consultant for the Custodial Trust, is responsible for implementing the remedial action in accordance with the Record of Decision (ROD), which was signed October 30, 2006. Morton's Project Manager will communicate with the USEPA on key decisions, attend meetings, and review documents.

Morton will subcontract a laboratory to perform chemical laboratory analyses for samples collected during OM&M. Currently, TestAmerica of Edison, New Jersey is the anticipated designated laboratory for groundwater analyses. Air analyses for mercury will be performed by Frontier Geosciences. Additionally, Morton will subcontract disposal facilities to receive material from the Site as necessary.

2.1.3 OM&M Contractor

Parsons is anticipated to be Morton's OM&M contractor responsible for Site inspection, ground water sampling, indoor air sampling, and reporting. Roles and responsibilities may include, but are not limited to, the following:

OM&M Manager

- Coordinates the schedules of the OM&M team in order to complete the required activities;
- Documentation and reporting of results from inspections, maintenance, operation, and monitoring;
- Communicates QA results to the affected parties; and
- Communicates with Morton and the regulatory agencies, as required.

- Reports to Project Manager;
- Evaluates the performance of engineering and institutional controls;
- Recommends corrective actions; and
- Reviews and approves repair.

Field Personnel

- Reports to Engineer;
- Responsible for the implementation of this QAPP;

- Coordinates the collection and testing of required samples;
- Transmits results to the Engineer;
- Performs inspections; and
- Reviews data, prepares reports, and implements the overall QA process.

The roles and responsibilities of the OM&M team described above may be modified as necessary, during the work.

2.1.4 OM&M Subcontractor

An OM&M subcontractor will be contracted through Parsons to make repairs as required by the deed notice(s). The extent of the repairs will be documented by Parsons in the quarterly and annual reports.

2.2 Communication

Open channels of communication are important in delivering a final product that meets the goals of the OM&M Plan. Lines of communication between Parsons and Morton will go through the OM&M Manager, who in turn, will direct necessary courses of action.

Section 3 – Monitoring and Maintenance

3.1 Documentation

The OM&M activities will be documented as described in the following sections.

3.1.1 Field Log Book

Field personnel will maintain daily logbooks during OM&M inspection and sampling activities, as necessary. Logbook entries will include the following information: date, time, weather condition, personnel onsite, equipment and material used, health and safety issues, work completed, delays, and other related information.

3.1.2 Inspection Forms

Field personnel will complete the field inspection forms presented in Appendix B of the OM&M Plan, the Bergen County Soil Erosion and Sedimentation Control Inspection Checklist, and the NJDEP Wetland Mitigation Monitoring Project Checklist as required during scheduled inspections. The forms will provide a record of the site condition and the effectiveness of engineering and institutional controls installed at the Site.

3.1.3 Quarterly Reporting

The OM&M team will prepare Interim Quarterly Reports for submission to Morton International as a summary of the past quarter's inspections, maintenance, and monitoring activities at the Site. The quarterly reports will consist of an operation log summary, inspection forms, and other pertinent information.

3.1.4 Annual Monitoring Reports and Certifications

Reports summarizing OM&M activities will be prepared annually. Biennially, a certification report will be prepared and combined with that year's annual report in accordance with N.J.A.C. 7:26E-8.4(c). Annual reports and Biennial Certifications will be submitted to Morton International and the regulatory agencies.

3.1.5 Record Drawings

Significant modifications to the engineering controls will be incorporated into record drawings after completion of construction. The Engineer shall review the record drawings for concurrence with the intent of the engineering control.

3-1

3.1.6 Field Change Form

Changes to the final design will require approval by the Engineer and Morton's Project Manager. **Attachment B** presents an example Field Change Form that includes fields for the description and the reason for the field change, as well as fields for the date, and signatures of the relevant parties.

3.1.7 USEPA Change Approval

Changes to the final design that are not consistent with the RAW will be communicated to the USEPA for approval by the Morton Project Manager.

3.2 OM&M Quality Control

Quality control (QC) will be performed during OM&M to ensure that necessary repairs made continue to be protective of engineering and institutional controls. QC testing will be conducted by Parsons field personnel or the OM&M subcontractor. The Engineer will review testing results on an on-going basis. QC testing requirements are presented below. The following subsections provide examples of QC components that may be required during construction repairs at the Site.

3.2.1 Undeveloped Area Cap Maintenance

Backfilling, shallow excavation, and grading may be required during construction maintenance and repair of the undeveloped area cap. QC testing requirements are presented in **Table 3**.

The QC table includes types of testing, frequency, and specified range of acceptable values for each of the materials used to implement and restore the excavations.

Pre-Construction

Pursuant to N.J.A.C. 7:26E-6.4(b)2, the borrow source for offsite backfill shall provide documentation certifying the material is not contaminated pursuant to any applicable remediation standards and the fill is virgin material from a commercial or noncommercial source or decontaminated recycled soil source. In addition, the borrow soil shall have similar physical properties to the material removed from the Site.

Construction

Parsons field personnel or the OM&M subcontractor, in accordance with the requirements outlined in **Table 3**, will perform QC testing and ensure that the repairs are being completed in a manner that will maintain the integrity of the engineering controls. During repair, Parsons field personnel will perform the necessary tests and observations stated in the table and as listed below:

- Verify that QC material testing and documentation is performed as presented in **Table 3**:
- Monitor and document the placement and compaction of backfill;
- Document the final horizontal and vertical limits (bottom elevation) of each regraded or excavated area in the field log book;
- Check that the subgrade is uniformly graded to the lines shown on the drawings, is firm, and free of soft/unstable wet areas;
- Inspect backfill material upon arrival to the Site for deleterious materials such as roots, organic matter, frost, ice, frozen soil, trash, vegetation, or other debris. Material that does not meet the gradation requirements shall be removed and may be blended to correct gradation and then returned to the site;
- Check that the cap layers are installed in the specified order and to the specified thicknesses following repair;
- Observe and document the type of equipment being used [weight, type of drum, length of feet on drum, type of energy (static versus vibratory), and the number of passes made by equipment] during construction;
- Monitor backfill moisture content prior to placement; and
- Visually inspect the restored area and verify that the surface is level and free of unacceptable surface materials such as construction debris and organic material.

Post-Construction

Parsons field personnel will monitor the restored area for erosion, settlement, and verify condition of surface repairs in subsequent site inspections.

3.2.2 Developed Area Cap Maintenance

In general, material for the developed area caps will be replaced or repaired in order to minimize infiltration and contact with soil having contamination greater than the Non-Residential Direct Contact Soil Cleanup Criteria (NRDCSCC) or applicable Non-Residential Direct Contact Soil Remediation Standards (NRDCSRS) limits. Developed area caps to be maintained consist of asphalt, concrete, and railroad ballast stone. Cap

locations and sections are depicted in Appendix A of the OM&M Plan. The QC testing requirements for the developed area caps are presented in **Table 4**.

Pre-construction

Parsons field personnel or the OM&M subcontractor will submit mix design for paving materials and QC testing results before placement, when applicable. Material will not be placed if necessary QC testing cannot be performed on the material. Parsons field personnel will inspect all deliveries of materials for compliance with the design intent.

Construction

Parsons field personnel or the OM&M subcontractor, in accordance with the requirements outlined in **Table 4**, will perform QC testing and ensure that the repairs are being completed in a manner that will maintain the integrity of the engineering controls. During repair, Parsons field personnel will perform the necessary tests and observations stated in the table and as listed below:

- Verify that QC material testing and documentation is being performed as presented in **Table 4**;
- Check that pavement and railroad ballast subgrades are uniformly graded, firm, and free of soft/unstable wet areas prior to placement of construction materials;
- Check that only essential equipment passes across prepared subgrades;
- Document the quantity of material being delivered to the Site and review certificates of compliance of the materials specified;
- Sample concrete during installation for use in testing slump and air entrainment as well as producing cylinders for strength testing;
- Verify reinforcement size and spacing is per specifications;
- Check that finished concrete or asphalt slopes to the drainage channels and the drainage channels in the concrete and asphalt pavement are sloped to drain with no low spots;
- Verify that concrete at the railroad track is placed so the replaced track will be at the same line and grade as existing conditions; and
- Verify seals at building and vertical barrier wall have been properly installed.

Post-Construction

Parsons field personnel will make observations during subsequent Site inspections to confirm that paved surfaces and ballast have been sloped correctly such that the pre-existing drainage paths are maintained and no localized ponding occurs.

3.2.3 Storm Water Control Maintenance

Maintenance of site storm water controls are included in **Table 5**. The tables include types of testing, frequency, and specified range of acceptable values for each of the materials used for repair and maintenance of storm water controls.

Pre-construction

Parsons field personnel or the OM&M subcontractor will perform QC testing of any imported materials performed before placement, when applicable. Material will not be placed if necessary QC testing cannot be performed on the material. Parsons field personnel will inspect all deliveries of materials for compliance with the project specifications.

Construction

Parsons field personnel or OM&M subcontractor, in accordance with the requirements outlined in **Table 5**, will perform QC testing and ensure that the remedial action is being completed in accordance with the construction drawings and specifications. During construction, the CQAI will perform the necessary tests and observations stated in the table, including the following:

- Verify that QC material testing and documentation is being performed as presented in **Table 5**;
- Verify that pavement, drainage swale, and West Ditch grades are consistent with the record drawings;
- Verify sizing and placement of riprap reinforcement; and
- Check that material thickness and lift thickness criteria are being met.

Post-Construction

Parsons field personnel will make observations during subsequent Site inspections to confirm that:

- Pavement in the developed area is properly graded and no significant localized ponding occurs after storm events; and
- Swales in the undeveloped area are graded as designed.

Section 4 – Analytical Procedures

The analytical sampling program for OM&M will involve sampling tasks as defined in the Undeveloped and Developed Area RAW. These sampling tasks include the following:

- Indoor air sampling in the Wolf Warehouse, and
- Ground water sampling for the vertical barrier wall effectiveness evaluation, contaminant flux monitoring, and the CEA.

Table 6 includes a summary of the data collection objectives. The constituents of interest and associated remediation goals for indoor air quality and groundwater sampling are summarized in **Table 2**. A summary of the planned sampling frequency is provided in the OM&M Plan. Preservation, container, and holding-time requirements for the parameters to be analyzed are listed in **Table 8**. See Section 5.1.2 and 5.1.3 of the Undeveloped Area RAW for additional details regarding the sample collection and quality control procedures for indoor air monitoring.

4.1 Wolf Warehouse Indoor Air Monitoring

The target compound for the indoor air sampling program is total atmospheric mercury consisting of gas-phase and particulate concentrations. The measured mercury levels will be compared to the New Jersey indoor reference value for mercury, which currently is 300 nanograms per cubic meter (ng/m^3) for gas-phase mercury and 1.1 micrograms per cubic meter ($\mu g/m^3$) for particulate-phase mercury.

The mercury sampling methodology is the Frontier Geosciences Sorbent Total Mercury Method – Total Gaseous Mercury Capture on Iodated Carbon (FGS-009). This is a peer-reviewed method developed by Frontier Geosciences, Inc., an analytical laboratory that specializes in low-level mercury analysis. The method collects all gas-phase and particulate-phase atmospheric mercury species by trapping on an iodated carbon matrix. After sampling, the mercury is leached off the iodated carbon using a hot-refluxing HNO₃/H₂SO₄ solution, followed by further oxidation using a BrCl solution. Aliquots of the digest are analyzed via USEPA Method 1631 - Mercury in Water by Oxidation, Purge and Trap, and Cold Vapor Atomic Fluorescence Spectrometry.

4.1.1 Sample Collection

Multiple samples will be collected during each scheduled event and will include collection of two indoor samples and one outdoor (upwind) sample of total atmospheric mercury. The final number of samples per event and the location where these samples will be collected will be determined in accordance with the *NJDEP Vapor Intrusion Guidance* after an initial building survey at the Wolf Warehouse.

Sampling will be conducted over an approximately 24-hour period. The samples during a single event will be collected approximately concurrently (i.e., within +/- 30 minutes of each other). Samples will be collected in the breathing zone approximately 5 feet above ground/floor surfaces.

Meteorological data and weather forecast information will be obtained prior to (i.e., the day before) and the morning of a sampling event to determine the location for upwind ambient air sampling. Concurrent meteorological data for the 24-hour sampling period will also be obtained for aid in interpretation of sampling results. The closest local source of representative meteorological data is the nearby Teterboro Airport.

4.1.2 Quality Control

Sample custody and documentation procedures will be followed as described in the sampling method. The analytical holding time for this method is specified as "indefinite" once the sample has been collected and sealed on the sampling media. In practice, samples will be shipped by an overnight express service to the laboratory upon the completion of sampling.

Quality assurance (QA) for the sampling program will consist of equipment calibrations, preventive maintenance, and quality control (QC) samples. Sampling equipment will be calibrated immediately prior to and after each sampling event in accordance with the manufacturer's standard instructions. Also, equipment, tools, gauges, and other items requiring preventive maintenance will be serviced in accordance with manufacturer's specified recommendations prior to each sampling event. Logs and field data sheets shall be used to document all equipment calibration and maintenance activities and results.

QC samples will consist of field duplicates and field/trip blanks, as well as all laboratory QC samples, as prescribed by the method. QC samples will be analyzed for total atmospheric mercury using the same methods as for the routine samples. The final number of QC samples per event will be determined after the initial building survey when the total number of sampling locations is determined. The total number of QC samples will be sufficient to assess the representativeness of the sampling method and collected data.

4.2 Ground Water Sampling

A combination of monitoring wells and piezometers are used to evaluate the performance of the remedy and to comply with long-term monitoring requirements. The monitoring program will consists of 24 monitoring wells; 20 newly installed wells (BW-MW-1 through BW-MW-1, CF-MW-1 through CF-MW-12 and four existing wells (MW-2, MW-8, MW-10 and MW-11).

Additionally, 12 piezometers are used to evaluate the remedy; eight for the barrier wall effectiveness evaluation (BW-PZ-1 through BW-PZ-8) and four to provide supplemental ground water elevation data for flux monitoring (CF-PZ-1 through CF-PZ-4).

4.2.1 Classification Exception Area

Ground water monitoring will be required to document the effectiveness of the remedial action and improve the estimation of the CEA duration. Ground water monitoring will be conducted twice each year. Each ground water-monitoring event will include collection of "static" water level measures and samples from CF-MW-1 through CF-MW-12, BW-MW-1 through BW-MW-8, MW-2, MW-8, MW-10, and MW-11. Each well will be gauged, and sample analyses will include determinations of all three site-related contaminants (arsenic, benzene, and mercury).

The gathered information will be evaluated with the monitoring well maintenance logs and ground water sampling results in order to determine the current effectiveness of the CEA and overall remedial action. Any necessary alterations or revisions to the existing CEA will be proposed to ensure the continued protectiveness of the remedial action to public health and safety and the environment.

4.2.2 Contaminant Flux

To provide for a remedy that is protective of surface water, monitoring of contaminant flux from ground water to surface water and sediment will be performed. The monitoring wells used for the flux monitoring will be sampled biannually (two times per year), which is the frequency described in the CEA report. The sampling and water level measurements will be performed as part of the periodic monitoring of the CEA.

Synoptic water-level measurements will be obtained from the 12 wells (CF-MW-1 through CF-MW-12) and 4 piezometers (CF-PZ-1 through CF-PZ-4) on-Site.

Ground water samples will be collected from 12 wells installed along the downgradient perimeter of the Site (CF-MW-1 through CF-MW-12 near Berry's Creek and Diamond Shamrock/Henkel Ditch (north). The samples will be collected using low-flow purge and sample collection methods (i.e., *NJDEP Low-Flow Purging and Sampling Guidance*) and methods provided in the NJDEP *Field Sampling Procedures Manual* (August 2005), and analyzed for mercury, arsenic, and benzene. Contaminant flux ground water quality data will be validated in accordance with **Section 4.8.4**.

The approach to calculate the solute flux rate of contaminants of concern specified in the ROD (mercury, arsenic and benzene) by multiplying the solute concentration of water

passing through a defined cross-section by the water flux rate passing through that same cross-section. The fluxes will be evaluated in 10 segments centered on the 10 proposed perimeter monitoring wells (CF-MW-2 through CF-MW-11) along Berry's Creek and Diamond Shamrock/Henkel Ditch (North). Ground water flow rates will be evaluated for each segment of the cross-section. Ground water solute concentrations will be defined by laboratory measurements of samples from the 10 wells used to define the cross-sections (CF-MW-2 through CF-MW-11). [This approach is similar to the method used to evaluate flux rates of inorganics in the Feasibility Study Report, pages 4-28 and 4-29.].

4.2.3 Vertical Barrier Wall Effectiveness

Relative to Overtopping

Two 4-inch diameter piezometers were installed on the inside of each segment of the vertical barrier wall for a total of eight piezometers (BW-PZ-1 through BW-PZ-8) (**Figure 18**). These piezometers will be used to monitor ground water levels and potential overtopping of the wall, and to evaluate the need for hydraulic controls within the limits of the barrier wall. The piezometers will be monitored monthly during the first year and then quarterly thereafter, pending results from the first year of monitoring. As required, water will be pumped from inside the barrier wall and transported to an appropriate off-site facility.

Ground Water Sampling and Analysis

In addition, monitoring of ground water for mercury in the eight wells installed outside the barrier wall (BW-MW-1 through BW-MW-8) will be used to evaluate the effectiveness of the wall. The monitoring wells will be sampled quarterly for the first two years and then biannually (two times per year) thereafter. The wells will be sampled using low-flow sampling procedures (i.e., *NJDEP Low-Flow Purging and Sampling Guidance*) and field methods approved in the NJDEP *Field Sampling Procedures Manual* (August 2005). Ground water sampling and water level measurements will be collected as part of the CEA sampling program, which was submitted to the NJDEP on April 4, 2007 with a supplement submitted November 14, 2007.

The ground water data from each monitoring well will be analyzed to determine if there is a significant trend in total mercury concentration in the ground water. The trend analysis will be performed using the non-parametric Mann-Kendall test for trend as described in *Statistical Methods for Environmental Pollution Monitoring* (Gilbert 1987). This test can be used on data that does not need to conform to any particular distribution and missing values are allowed in the analysis. It also allows the use of data with less than the detection limit values.

4.3 Data Quality Objectives

A clear definition of data objectives and procedures is required to effectively use the data generated during field activities of the OM&M. This is accomplished through the establishment of Data Quality Objectives (DQOs), which relate the extent and quality of data to be gathered in the OM&M to their ultimate objectives. DQOs for remedial action activities are provided in **Table 6**.

Different analytical levels are available for a site investigation depending on the DQOs of the program. The analytical levels, as defined by the USEPA *Data Quality Objectives for Remedial Response Activities*, (USEPA, 1987) include the following:

Level I - Field screening or analysis using portable instruments. Results are often not compound specific and not quantitative; but results are available in real-time. It is the least costly of the analytical options.

Level II - Field analyses using more sophisticated portable analytical instruments than Level I. The instruments may be set up in a mobile laboratory onsite. There is a wide range in the quality of data that can be generated. It depends on the use of suitable calibration standards, reference materials, and sample preparation equipment; and it depends on the training of the operator. Results are available in real-time or within several hours.

Level III - All analyses performed in an off-site analytical laboratory. Level III analyses use or are based upon approved or routinely-accepted analytical methodologies but do not usually utilize the detailed validation or documentation procedures of DQO Level IV analysis.

Level IV - USEPA Contract Laboratory Program (CLP), Routine Analytical Services, or equivalent. All analyses are performed in an off-site laboratory following CLP or equivalent USEPA protocols. Level IV analyses require rigorous QA/QC procedures and documentation.

Level V - Analysis by nonstandard methods. All analyses are performed in an off-site analytical laboratory. Method development or method modifications may be required for specific constituents or detection limits.

The project-specific DQO levels that will apply for various parts of the project are detailed in **Table 6**.

The purpose of the QA/QC program is to develop, document, and implement procedures for producing and providing field measurements, sampling, and analytical testing data of known quality that meet or exceed quality standards consistent with the intended use of the information.

This QC Program:

- Establishes the data quality goals through the DQO process; and
- Sets guidelines for meeting these goals through the Precision, Accuracy, Representativeness, Comparability, and Completeness (PARCC) parameters.

The DQO-level process provides a system for selecting methods, level of QC, and documentation appropriate for the project based on intended use of the data. Setting PARCC guidelines for the data is necessary for subsequent assessment of actual data quality relative to accepted standards. Specific PARCC objectives are based on the analytical methodologies used. A description of the specific calculations for measuring data quality relative to the guidelines detailed below is presented in **Section 4.8.1**.

DQOs are based on the concept that different data uses may require varying levels of data quality. Project DQOs are established based on the overall project objectives and types of decisions that will be made based on the data collected. DQOs are defined with respect to the types, numbers, and locations of samples that will be collected, and the quality assurance levels associated with the analysis. The guidance document *Data Quality Objectives: Development Guidance for Uncontrolled Hazardous Waste Site Remedial Response Activities* (USEPA, 1987) has been used as the basis to determine the analytical methodologies and data quality required to obtain confidence levels appropriate for the intended data use.

While most data collected will be considered DQO Level III, some data from all DQO levels may be collected throughout the project. The rationale of applying DQO levels to analyses based on the types of decisions arising from those analyses is summarized below. The DQO levels of the specific analyses proposed throughout this program are provided in **Table 6**.

DQO Level I and II data are comprised of field data collected at the Site, including: the screening of soil, air, and water for organic vapors using a photoionization detector and/or a flame ionization detector: water levels; flow rates; pH; temperature; turbidity; dissolved oxygen; salinity; oxidation reduction potential; and specific conductivity of water samples.

These data will be used to monitor the health and safety of field personnel, to assist in choosing sampling locations, to evaluate the adequacy of well development and purging procedures, to assist in determining potential remedial alternatives, and to evaluate intrinsic biological activity. Field analysis and sampling methodologies are described in the OM&M Plan.

DQO Levels III and IV will include all samples collected for laboratory analyses. These analyses will be performed following standard USEPA methods as applicable at New

Jersey certified laboratories. Analytical methods to be followed are discussed in **Section 4.2.3**. Parameter remediation goals are listed in **Tables 1 and 2**. Analytical data will have standard detection limits and documentation suitable for characterization of the ground water at the Site, and also for evaluation of potential remedial alternatives.

DQO Level V data are expected to be limited to analytical data needed for ecological risk assessments and for the indoor air analyses for mercury. These data may require specialized analytical methods such as acid volatile sulfide/simultaneously extracted metals and determination of selected organic and inorganic constituents at low detection limits. The Sorbent Total Mercury Method for indoor air by Frontier Geosciences is included in this category.

Changes from original documents, procedures, and specifications are expected. Change does not necessarily imply a nonconformance with the work, but simply means that original plans may need alterations because of information or events that occur during the execution phase of the project. However, changes need to be documented according to the corrective action procedure described in **Section 4.9**.

4.4 Sample Collection

4.4.1 Field Screening Procedures

The on-site screening data generated using analytical techniques are an essential part of performing the sampling tasks for the ongoing operations. Because it is essential that valid and representative data are obtained during this process, it is important that proper equipment and analytical methods be used. The following analyses are anticipated during the course of OM&M:

- I. Determination of health and safety parameters using portable detectors:
 - Explosive atmosphere/oxygen content;
 - Total organic vapor content via photoionization or flame ionization detector;
 - Specific gas detectors (sulfur, methane, etc.);
 - Noise level; and
 - Dust level.
- II. Determination of the following aquifer stabilization parameters for groundwater sample collection using the NJDEP/EPA low-flow purge and sample method:
 - pH;
 - Temperature;

- Specific conductivity;
- Oxidation Reduction Potential (ORP);
- Dissolved Oxygen (DO); and
- Turbidity.

4.4.2 Sampling Procedures

All groundwater sampling activities will be performed in accordance with the USEPA and the NJDEP guidelines, including collection procedures, decontamination of equipment, and sample handling and preservation. The field methods that will be used for this project are summarized in **Table 6**. Specific details on health and safety monitoring are provided in the Health and Safety Plan. Collection methods and preservation requirements for each analyte are listed in **Tables 7 and 8**.

4.4.3 Sample Analysis

Samples will be analyzed by an off-site laboratory in accordance with the USEPA SW-846 methods. A listing of the specific SW-846 analytical methods, parameters and sample collection requirements are provided in **Table 6**. The reporting/quantitation limits are also provided in **Table 9**. Additional guidance is provided below.

Parameters will be analyzed according to analytical procedures set forth in USEPA SW-846 (USEPA, 1986b). Samples that have significant matrix interference may require specialized cleanup procedures and re-analysis in order to eliminate the interference and permit analysis to proceed with a reporting limit at or closer to the quantitation limit. The laboratory is expected to report any cases of matrix interference that cause elevated reporting limits without positive results for target analytes. Consideration for specialized methods will be given, based on the magnitude of elevated reporting limits, critical nature of the sampling points, availability of analytical options, and relative chance of successfully obtaining improved information.

Samples will be analyzed for the parameters as presented in **Table 9**. Analyte lists will be clearly indicated as such in the chain-of-custody (COC). The analyte list does not impact the method used. However, only the requested analytes are subject to method requirements such as calibration. Note: The first round of groundwater sampling at the Site will include full Target Compound List (TCL) / Target Analyte List (TAL) compounds, as required by USEPA in there comment letter dated July 2, 2009. Additional chemical conditions analyses noted in the USEPA letter will be sampled during a subsequent sampling round.

Laboratories will maintain on file current Method Detection Limit (MDL) studies to demonstrate their ability to meet or exceed the recommended reporting limits. Laboratories must perform MDL studies on an annual basis (depending on the method) to demonstrate that it can meet or exceed the required project-specific limits. The USEPA defines the MDL to be "the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero." The USEPA procedure used for establishing MDLs is described in Appendix B of Part 136 "Definition and Procedure for the Determination of the Method Detection Limit - Revision 1.11," (40 CFR 136, 1986). In addition, the laboratory may establish laboratory-specific reporting limits or Practical Quantitation Limits (PQLs) that are verified by the MDL studies and are included on the laboratory's analytical reports.

4.5 Sample Custody

An essential part of any sampling/analytical program is the ability to document sample history. Sample custody procedures establish the documentation and control necessary to identify and trace a sample from collection through final analysis and reporting. Sample custody procedures are designed to provide documentation of collection, preparation, handling, storage, and shipment of all collected samples. A sample is under custody if it is:

- In one's actual possession;
- In view after being in physical possession;
- Locked after having been in physical possession; and
- In a secure area, restricted to authorized personnel.

Documentation associated with the sample custody procedures includes, but is not limited to, sample labels to prevent sample misidentification, container seals to prevent unauthorized access to samples, and COC forms to document proper preservation and handling procedures from collection through laboratory receipt.

All documentation procedures will utilize standard, evidentiary protocols as follows:

- Only pre-formatted forms or sequentially numbered, bound log books will be utilized for collection of information;
- All entries on pre-formatted forms will be completed; blanks are not acceptable; lines may be marked "NA" or lined out in cases where information is unavailable or inapplicable;
- All entries will be made in waterproof ink with no erasures;
- A single stroke will be used to cross out incorrect information; corrections will be dated and initialed;
- Forms will be filled out in a legible manner and will be signed and dated by the person completing the form;

- Following completion of the form, any trailing blank space will be crossed out to
 prevent addition of information at a later date; the crossed-out spaces will be
 initialed by the person completing the form; and
- Original forms (with the exception of COC forms) will be maintained in the project files; original COC forms will be shipped to the laboratory with carbonless copies maintained on file.

Sample custody protocols, both field custody procedures and laboratory custody procedures, are described below.

4.5.1 Field Samples

The field team is responsible for maintaining and documenting sample custody from collection until shipment under custody seal protection to the off-site laboratory. The Parsons Field Team Leader is primarily responsible for ensuring that the field team adheres to proper custody and documentation procedures during all sample collection operations. The OM&M Manager is responsible for auditing custody procedures.

The following procedures, or equivalent, will be used for sample tracking and field activities:

- Field or sample collection logs;
- Sample identification and labeling;
- Sample COC form; and
- Sample shipment.

Original sample information will be collected in the field by a field team member who will record it into either field log books or sample collection logs as appropriate for the information. The sample collection log and field log books will be used to record a variety of information, including date, start and end time of activities, names of all sampling team members, weather conditions, sample location, equipment used to collect the sample, depth of sample, time of collection, sample description, sample identification number, and the volume and number of containers. All original sample collection forms will be maintained on file. Portions of the sample collection log information may be transcribed onto the COC forms prior to shipment of samples.

4.5.2 Sample Labeling - Field Generated Samples

Sample labels will be checked against field log books and COC forms prior to shipment to the laboratory. Any discrepancies will be corrected by crossing out the wrong text or identification with a single line, initialing the mistake, and writing the correction legibly.

Sample containers will be labeled clearly and all labels will be secured with clear tape to prevent separation of labels from sample containers or obscuring of information.

Sample labels will conform to Morton's standards as defined in the Corporate Remediation Group (CRG) website. The following information will be included on sample labels affixed to field sample containers:

- Destination Laboratory (e.g., TestAmerica Laboratory, Edison NJ);
- Site Identification—the site name and location or a unique project number which identifies the Site. The Ventron/Velsicol OU-1 site has been assigned the site identification code 'VV';
- A Unique Sample Code (see below);
- Location Sampled Code (use same code as used in the Environmental Quality Information System [EQuIS] database, e.g., MW-1);
- Date Sampled (format as year-month-day, i.e., yyyymmdd e.g., 20030212);
- Time Sampled (HH:MM in military format. Include leading zeroes and colon, e.g., 09:30, 13:45);
- Depth at which sample was taken, including units (in feet);
- Sample matrix code;
- Analyses to be performed on the sample;
- Initials of sampler;
- "Filtered" or "Unfiltered" (this classifies the sample as "dissolved" or "total"); and
- Description of any preservation done.

Additionally, sample labels may contain the following optional information:

- Sample collection method (grab vs. composite);
- Container number (e.g., 1 of 2; 3 of 5); and
- Comments—any other information.

The Code assigned to a Sample at the time it is collected is a critically important part of the data management system and therefore should conform to the following specification. The code must be unique and contain the following six (6) items.

[date location depth preservation filtration type]

Example: A NORMAL environmental sample from well MW-21 from a depth of 25 feet on 3 Jan 2007.

20070103MW-21V25N

The <u>date</u>: use the format "YYYYMMDD" ("YYYY"=four-digit year, "MM"=two-digit month, and "DD"=two-digit day) Ex. 20070103 for 3 January 2007

This format of the date is used so that samples will sort chronologically.

The <u>location</u>: use the location code that has been assigned to the location where the sample was taken, e.g., MW-21 (see restrictions below)

The depth at which the sample was taken:

- for wells, use the depth in the well where the pump inlet was located prefixed with a "V" for Vertical (e.g., V25);
- for soil samples use the "V" prefix followed by the sampled range (e.g., V2-4); and
- for samples from wells where the vertical depth of the sample is not known, use the "V" prefix followed by the depth of the midpoint of the screened interval followed by the character "@", e.g., V34@. The @ symbol indicates that the depth was derived and is not a measured value.

The use of <u>preservation</u>:

- for samples that would normally be preserved, such as VOA samples and metals samples, but where it is desired to collect an unpreserved sample, indicate that the sample is unpreserved by including the character "U" in the sample code immediately after the depth entry; and
- for samples that would normally be unpreserved, such as Semivolatile Organic Compound (SVOC) samples, but where it is desired to collect a preserved sample, indicate that the sample is preserved by including the character "P" in the sample code immediately after the depth entry.

The use of <u>filtration</u>: if the sample is filtered, place a "D" in the code immediately in front of the sample type to indicate that the sample contains only dissolved components.

The sample type: e.g., "N" for a normal environmental sample

Restrictions:

Currently the sample code is limited to 40 characters by a field length limitation in the EQuIS database. If you construct a sample code and it exceeds the 40-character limit, contact the OM&M Manager to determine how to contract the sample code while assuring that the code remains unique. Refrain from using spaces in the code and use dashes only in the location code and depth range.

Experience has shown that certain characters cause a problem with Laboratory Information Management System (LIMS) data systems and therefore should not be used in the location codes or the sample codes (see the list below).

ampersand	&	back quote	`
backslash	\	Dollar sign	\$
double quotes	"	pipe or vertical bar	
semi colon	;	Single quotes	•
colon	:	any parenthesis or	{ },(),[]
		brackets	
forward slash	/	asterisk	*
greater than	>	lest than	<
question mark	?	curly quotes	" "

Field Quality Control Samples

Field Duplicates

A field duplicate is given the same code as the normal sample except that the designation "FD" is used instead of "N".

Example: 20020103MW-21V25FD

Field Blanks

Field Blanks are labeled with the date, site code, and the designation "FB".

Example: 20020103VVFB

When there is more than one field blank for a given day, a unique sequence number should be added.

Example: 20020103VVFB-1

Equipment Blanks

Equipment Blanks are labeled with the date, the site code, and the suffix "EB".

Example: 20020103VVEB

If there were more than one Equipment Blank for a given day, a unique sequence number should be added.

Example: 20020103VVEB-1

Rinse Water

Rinse Water samples are labeled with the date, the site code, and the suffix "RW".

Example: 20020103VVRW

Well Construction Materials

Samples of materials used in the boring and installation of a well are labeled with the date, the site code, and the suffix "MB". These materials include drilling muds, drilling water, grout, cement, sand, etc.

Example: 20020103VVMB

4.5.3 Lab Samples

The laboratory is responsible for maintaining and documenting sample custody from sample receipt until final analysis, reporting, and disposal. The COC procedures for each analytical laboratory are detailed in the laboratory-specific quality assurance plans. These COC procedures are comparable to those required in the CLP Routine Analytical Services and meet all NJDEP certification requirements. It is the responsibility of the TestAmerica and Frontier Geosciences QA Managers to ensure that sample integrity and documentation are sufficiently maintained through the established custody procedures. These procedures are subject to audit (laboratory internal or external audits). The custody procedures are summarized below.

Sample Receipt

Upon receipt in the laboratory, the Sample Custodian, or representative, will unpack the shipping containers, compare the contents with the COC record, and sign and date the record. The Sample Custodian will also record the carrier and air bill number on the original COC form, if it is not already present. A Sample Receiving Checklist will be completed by the Sample Custodian or designee for each shipment received at the laboratory. Upon sample receipt, the Sample Custodian or designee will:

Inspect the sample shipment containers for the presence of intact custody seals. If
custody seals are missing, the Parsons OM&M Manager must be immediately
notified to confirm if custody seals were inadvertently left off. If there is any
indication of invalid custody seals (either broken seals upon receipt or missing
custody seals with an indication that custody seals were placed prior to shipment),

- the entire sample shipment may be excluded from analysis at the discretion of Morton and the Parsons OM&M Manager;
- Open the sample shipment containers in a secure limited-access area;
- Determine if proper temperature has been maintained during shipment. The receiving temperature will be recorded on the COC form. Any receipt outside 4°C (plus or minus 2°C) that will impact the usability of the data should be immediately reported by telephone to the Parsons OM&M Manager;
- Inspect the samples for breakage or other damage. If samples have been damaged during shipment, the remaining samples will be carefully examined to determine whether they were affected. Any samples suspected of being affected will also be considered damaged. It will be noted on the COC record what specific samples were damaged and that the samples were removed from the sampling program. The Parsons OM&M Manager will be notified as soon as possible by telephone and in writing that samples were damaged and that they must be re-sampled, or the testing program changed. The cause of damage must also be determined;
- Compare samples received against those listed on the COC and the Laboratory Work Request. Discrepancies must be immediately reported by telephone to the Parsons OM&M Manager;
- Verify that sample holding times have not been exceeded. If the sample holding time has been exceeded, the Parsons OM&M Manager must be notified by telephone as soon as possible. In addition, written notification must be sent to the Parsons OM&M Manager that this has occurred;
- Sign and date the COC form and attach the air bill to the COC form;
- Verify pH of samples that are preserved according to the COC. This step may be
 performed during sample login or during extraction/analysis. Discrepancies in the
 actual preservation and the listed preservation must be reported immediately to
 the Parsons OM&M Manager;
- Place the samples in adequate laboratory storage;
- Log the samples into a computerized LIMS that should contain, at a minimum, the following information:
 - o Project identification number;
 - o Sample numbers;
 - o Type of samples and tests requested;
 - o Date received in laboratory; and
 - o Sampling date.
- Notify the laboratory manager or group leaders of sample arrival. If extremely short holding time (24 hours from receipt or less) analyses are required, another parallel mechanism for expedited notification of the appropriate departments should also be used; and

• Place the completed COC records in the laboratory project file and forward a signed copy of the COC to the Parsons OM&M Manager.

If samples collected arrive without COC or incorrect COC records, the actions described below will be taken by the Sample Custodian.

If the COC form is incorrect, a telephone call will be made as soon as possible, and a memorandum to the Parsons OM&M Manager will be prepared outlining the deviations from accepted procedure. The memorandum must be signed and dated by the person originating the COC and the Sample Custodian. The memorandum will serve as an amendment to the COC. If the information on the COC form cannot be corrected by the Sample Custodian or the field personnel, the samples affected will be removed from the sampling program.

If the COC form was generated but not shipped with samples, the field personnel will immediately contact the laboratory Sample Custodian and a memorandum will prepared by the Parsons Project Manager that lists the persons involved in collecting, shipping, and receiving the samples and the times, dates, and events. Each person involved must sign and date this memorandum. The COC form will be immediately forwarded (via facsimile) to the laboratory and the memorandum attached to it and placed in the file.

If a sample set arrives at the laboratory without a COC form and it is determined that a COC form was not prepared for the respective sample set, an attempt will be made to reconstruct the COC form based on field information and this COC will be accompanied by a memorandum from the Parsons OM&M Manager. If it is determined that a COC cannot be reconstructed, then the affected samples will be removed from the sampling program and a subsequent set of samples will be collected and submitted to the laboratory along with a COC form.

Sample Analysis and Disposal

The Laboratory Project Manager will inspect the paperwork and, if all is in order, will direct the laboratory sections to initiate extraction and analysis. If problems are noted, the Laboratory Project Manager will resolve them with the Parsons OM&M Manager.

After log-in, samples will be placed in limited-access, refrigerated (at 4°C) storage, pending preparation and analysis. Sample COC must be maintained throughout the laboratory by a system of door locks. All external doors to the laboratories will be kept locked at all times. Access will require use of a key issued to company employees. Thus, in order to gain access to the laboratories, one must either be an employee or be escorted by an employee.

For this project, all field samples and extracts are to be retained by the laboratory for three months from date of delivery of hard-copy results.

Laboratory personnel will comply with all internal laboratory COC procedures as defined by the specific laboratory's procedures.

4.5.4 Sample Labeling - Lab Generated Samples

Each lab has its own system for identifying samples as they come into the lab from the field. This designation for each sample analyzed is placed on the Symmetric Multi-Processor (SMP) Electronic Data Deliverable (EDD) along with the date the sample arrived in the lab. The lab also adds to the SMP EDD the Lab Project Number and the Morton Purchase Order Number under which the analyses are being performed. The following naming conventions will be used to generate unique sample codes to identify Lab Quality Control Samples. These designations will be used in each of the EQuIS Imports, CRG SMP, CRG TRSQC, and CRG BAT, to describe and track the measured analytical results associated with these samples.

Trip Blanks

Trip Blanks are labeled with the date, site code, and the designation "TB".

Example: 20020103VVTB

When there is more than one trip blank for a given day, a unique sequence number should be added.

Example 20020103VVTB-1

Blind Samples

In some cases a sample, for QA/QC purposes, will have to be submitted to the lab with a "blind" sample code. The blind code must be unique and the field staff must make an entry in their field logbook cross-referencing this blind code with the correct CRG sample code for that sample. When the results return from the lab, the cross-reference will allow them to enter the results into the database under the correct CRG sample code rather than the blind code.

Matrix Spikes

A matrix spike sample is given the same code as the normal sample which is its parent except that the designation "MS" is used instead of "N".

Example: 20020103MW-21V25MS

Matrix Spike Duplicates

A matrix spike duplicate is given the same code as the normal sample which is its parent except that the designation "SD" is used instead of "N".

Example: 20020103MW-21V25SD

Note: when matrix spike and matrix spike duplicate samples are both to be taken, the lab must prepare separate containers for each of these samples. Past practice of using a single container to hold the material for both these samples has been discontinued and the sample type designation "MSD" eliminated.

Lab Replicates

When the lab runs a replicate analysis on a sample, a new sample code is assigned to the sample which consists of the original sample code with the added ending "LR".

Example: Parent Sample Code 20020103MW-21V25N Example: Lab Replicate Code 20020103MW-21V25NLR

Method Blanks

The sample code is constructed using the convention of the lab doing the analysis followed by "MB".

Example: Normal Lab Code 04-12-03-564 Example: Sample Code 04-12-03-564MB

Blank Spikes

The sample code is constructed using the convention of the lab doing the analysis followed by "BS".

Example: Normal Lab Code 04-12-03-564 Example: Sample Code 04-12-03-564BS

Blank Spike Duplicates

The sample code is constructed using the convention of the lab doing the analysis followed by "BSD".

Example: Normal Lab Code 04-12-03-564 Example: Sample Code 04-12-03-564BSD

Lab Control Samples

The sample code is constructed using the convention of the lab doing the analysis followed by "LCS".

Example: Normal Lab Code 04-12-03-564 Example: Sample Code 04-12-03-564LCS

Surrogates

Surrogates are reported along with the results for a sample and, therefore, fall under the sample code of that sample. The Surrogate result type is designated as "SUR" and the surrogate recoveries are reported in the QC results section, not in the sample analytical results section.

Internal Standards

Internal Standards are reported along with the results for a sample and, therefore, fall under the sample code of that sample. The Internal Standard result type is designated as "IC" and the measured values are compared to the Standard in the QC results section, not in the sample analytical results section.

4.5.5 Chain-of-Custody (COC) Form

COCs will be used as a primary documentation mechanism to provide for proper documentation of all information pertaining to each sample. COC forms are utilized to record the sampling location, type and amount of sample collected, preservatives, requested analyses, date/time of sample collection, sampler name, date/time of custody transfers, custody transfer signatures, and other pertinent information for each sample. A copy of the COC to be used for this project is included in **Attachment A** for reference, although comparable COCs may be used at other times throughout the program as long as all required information is recorded.

A COC form will be initiated in the field and will accompany each group of samples during shipment to the laboratory. COC forms should not be prepared by individual cooler. However, a copy of the COCs or an identification of a contact should be provided with each cooler in case the cooler containing the original COCs is lost in shipment. Each time the custody of a sample changes, the new custodian will sign the form and record the date/time of taking possession. Following completion of COC forms, original COC forms are provided to the laboratory by placing COC forms in a self-sealing, Ziploc®-style bag and shipping with a sealed sample shipment container under custody.

Each page of the COC form should contain a unique Identifier for that Form clearly indicated on the Form. The following identifier format is recommended:

YYYYMMDDCOC-X

where X is a sequential number used only once on any given day (e.g., 1, 2, 3, etc.) "YYYY"=four-digit year, "MM"=two-digit month, and "DD"=two-digit day.

"YYYYMMDD" represents the date on which the samples were packaged and shipped or relinquished to the lab. The sequential number is used to indicate the number of forms (pages) prepared on a single day. For example, two containers going to the Lab on 3 February 2002:

20020203COC-1 20020203COC-2

4.5.6 Sample Shipment

Custody documentation is critical during sample shipment both to prevent sample tampering and to minimize the opportunity for sample holding times to be compromised.

The critical documentation to prevent sample tampering is signed custody seals. If appropriate, each sample shipment container (cooler) will be secured through the use of signed and pre-numbered laboratory custody seals affixed to each cooler. Custody seals must never be pre-signed but rather must be signed at the time of securing the cooler. Custody seals must be secured with clear tape to prevent detachment and subsequent reattachment of the seals. In addition, 2-inch-wide clear tape will be wrapped entirely around the cooler.

To further document and assist sample tracking, the sender's copy of the air bill must be maintained on file. For samples shipped by commercial carrier, the air bill serves as an extension of the COC record between the final field custodian and receipt in the laboratory. To correlate against the air bill, the method of shipment, courier name, air bill number, and other pertinent shipment information will be entered on the COC form.

Water and soil samples will be placed in laboratory-supplied coolers and iced to 4° C ($\pm 2^{\circ}$ C) after collection and labeling. Air sampling canisters will be placed in the original shipping cartons. All samples will be delivered to the laboratory within 48 hours of sample collection by commercial courier.

Individual sample bottles will not be sealed; however, each cooler will be sealed with a transportation security seal containing the sampler's initials. The cooler will then be sealed with packing tape.

Each Container that carries samples to the analytical laboratory should have a unique container code and that code should appear on the COC. Any convention is acceptable so long as the Identifier is unique. The following format is suggested:

YYYYMMDDLabBOX-Z

Where Z is a sequential number used only once on any given day (e.g., 1, 2, 3, etc.) "YYYY"=four-digit year, "MM"=two-digit month, and "DD"=two-digit day, and "Lab" is the Lab Code for the Lab doing the analyses.

"YYYYMMDD" represents the date on which the container was packaged and shipped to the lab. The sequential number is used to indicate the number of the cooler prepared on the same day. For example, two containers going to the TestAmerica Lab in Edison on 3 February 2002,

20020203TESTAMERICA-EDBOX-1 20020203TESTAMERICA-EDBOX-2

4.6 Field Equipment

4.6.1 Field Decontamination

Prior to mobilization, all associated sampling equipment will be thoroughly cleaned to remove oil, grease, mud and other foreign matter. In addition, before initiating sampling at each location equipment will be thoroughly cleaned at the decontamination area to prevent potential cross-contamination. The equipment will be inspected by Parsons' field personnel after cleaning and prior to initiation of work. Cleaning will be accomplished by flushing and wiping the components to remove all visible foreign matter followed by a thorough wash and rinsing.

All equipment used for the collection of samples for chemical analysis which require precleaning including tubing and pumps will be cleaned between each sampling location/interval according to the following protocols;

- 1) wash with detergent (Alconox);
- 2) rinse with potable water;
- 3) rinse with distilled and deionized water;
- 4) rinse with 0.1N nitric acid (use for metals analyses only);
- 5) rinse with generous amounts of distilled and deionized water;
- 6) rinse with methanol;

- 7) allow to air dry; and
- 8) rinse with distilled and deionized water.

The distilled and deionized water which is used for cleaning sampling tools will be sampled once for Target Compound List (TCL) Volatile Organic Compounds (VOCs), TCL SVOCs, and Target Analyte List (TAL) metals analyses.

The bottom three feet of the water level measuring equipment will be cleaned prior to use in each well with an methanol- and deionized-water rinse.

A decontamination area will be constructed with a polyethylene liner. The Decontamination Area will be equipped with a stainless steel or aluminum foil-wrapped rack for staging equipment to be decontaminated. Following decontamination, the equipment will be transferred to an adjacent aluminum foil-wrapped table for immediate use or for storage.

Equipment will be protected from all forms of chemical contact between final rinse and initial use. Equipment (bailers, pumps, etc.) that will not be used immediately following cleaning in the decontamination area will be wrapped in foil and placed on a 6-mil polyethylene sheeting until the equipment is needed.

4.6.2 Field Calibration

All instrumentation used to perform chemical measurements must be properly calibrated prior to use in order to obtain valid, documentable, and acceptable results. This section describes procedures for maintaining the accuracy of all the instruments and measuring equipment that are used for conducting field tests and laboratory analyses. These instruments and equipment will be calibrated prior to each use or on a scheduled, periodic basis. The procedures described herein are to be used in conjunction with the specific laboratory/field procedures for instrument operation, any relevant analytical methodology requirements, and instrument manufacturer's instructions.

The field personnel, under the direction of the Parsons Field Team Leader, are responsible for the proper calibration of field equipment in compliance with this QAPP, field procedures for instrument operation, and instrument manufacturer's instructions. The Parsons OM&M manager is responsible for auditing calibration methods and documentation to ensure consistency with this QAPP, field procedures for instrument operation, and instrument manufacturer's requirements.

Calibration of field instruments is governed by the specific operating procedure for the applicable field analysis method, and the requirements of the NJDEP FSPM (August 2005). Such procedures take precedence over the following general discussion.

The field measurements defined for this project may require the following

instrumentation: pH meter, temperature meter, specific conductance meter, ion-specific electrodes, turbidimeters, dissolved oxygen meter, redox meter, salinity meter, explosive atmosphere/oxygen meters, gas-specific meters (e.g., sulfur, methane), electronic balances, and flame or photoionization detectors. Field equipment will be calibrated using verified standards (traceable to appropriate National Institute of Standards and Technology (NIST) standards where possible), at least daily or at the frequencies recommended by the manufacturer, whichever is greater. Balances will be calibrated with class C weights and inspected by a certified technician at least annually or at the start of the field program. Daily checks will confirm balance calibration. All instruments will be maintained and repaired in accordance with the manufacturer's specifications. In addition, prior to use, each major piece of equipment will be cleaned, decontaminated, checked for damages, and repaired, as needed. Calibration procedures, including date of calibration, readings, type, concentration of standards and source of calibration standards, will be recorded in the field log or individual instrument calibration log, if available.

Despite even the most rigorous maintenance program, equipment failure can occur. When equipment cannot be repaired in the field, it will be replaced as quickly as possible. Field notes from previous sampling trips will be reviewed to ensure that prior equipment problems are addressed. Wherever possible, spare instrumentation and parts, such as a spare pH electrode or photoionization lamps, will be maintained onsite or will be readily available. Problems identified with specific equipment will be reported immediately to the field team leader to assess the problem and mange for repair or replacement. The USEPA analytical methods selected for use in this investigation specify the types and frequency of calibrations.

For accessory analytical equipment such as balances and ovens that are required in preparation procedures, calibrations will be performed per manufacturer's instructions and the following guidelines:

- Calibrations of balances and ovens must be checked daily and recorded in a logbook or appropriate calibration-specific log;
- Corrective actions must be taken for out-of-control check measurements as described in the laboratory's quality assurance plan or manual;
- The equipment will not be used until either it is recalibrated or corrective action results in a subsequent check standard meeting control criteria; and
- Calibration of other miscellaneous analytical equipment (e.g., automatic pipettes) will be performed according to manufacturer's recommendations.

Implementation of the laboratory calibration program will be the responsibility of the Laboratory Director and the analysts. The TestAmerica and Frontier Geosciences QA Managers have the responsibility to review and oversee the implementation of the laboratory program during analysis of project samples.

4.6.3 Field Preventative Maintenance

Maintaining equipment in good working order is critical to the generation of quality data both in the field and in the laboratory. Parsons utilizes a preventative maintenance program to minimize costly field equipment downtime, scheduling problems, or generation of suspect data. Field equipment and supplies are routinely maintained, stocked, and cared for by personnel who are specifically responsible for field equipment and supplies. The Parsons Field Team Leader manages the system of obtaining and maintaining working field equipment used in the collection of samples or measurement of data. The HSO is responsible for ensuring health and safety equipment is working properly. An inventory of equipment, including model and serial number, quantity, and condition will be maintained. Each item will be tagged and signed out when in use, and its operating condition and cleanliness will be checked upon return. Routine checks will be made on the status of equipment, and spare parts will be stocked. An equipment manual library will also be maintained. Field equipment will be properly cleaned according to decontamination and instrument specifications after each use and malfunctions will be reported to the responsible personnel.

Field sampling personnel will be familiar with the field calibration, operation, and maintenance of the equipment, and will perform the prescribed field operating procedures outlined in the manufacturers' instructions. Equipment will be inspected at least twice, once before start-up and again at the end of the work shift. Preventative maintenance performed will be entered in individual equipment maintenance logs.

4.6.4 Laboratory Preventative Maintenance

The laboratory also follows a well-defined program to prevent the failure of laboratory equipment and instrumentation. The preventive maintenance program will be as specified in the analytical methods and/or laboratory Standard Operating Procedures (SOPs), whichever is more stringent. This program includes specific procedures as illustrated in the following examples:

- Laboratory staff will be trained in the maintenance requirements of the instrumentation used in this program. Preventative maintenance schedules and procedures will be outlined in the laboratory's SOPs and will be adhered to; and
- An inventory of replacement and spare parts for instrumentation will be maintained.
 Maintenance log books for each instrument will be kept along with information on
 routine and non-routine maintenance procedures. Records of maintenance activities
 will include identification of the instrument with identification number, date of
 activity, and the maintenance activity performed.

4.6.5 Inspection of Consumables

Prior to commencing sample collection activities each day, the Parsons field team leader will inspect all consumable items (gloves, collection bags, tubing, etc.) for defects or signs of excessive wear that may impact sample quality. All items of questionable quality will be immediately discarded and replaced.

All safety equipment will undergo routine inspection by the Parsons HSO as described in the Health and Safety Plan.

4.7 Field Activities Documentation

A field logbook for all sampling activities will be maintained for later data validation and reporting. The field logbook will be used in accordance with the NJDEP FSPM (August 2005), and include information related to sampling activities (date, location, equipment, etc.), as well as all available information related to quality control and assurance. The information maintained in the field logbook will be used to generate a field report submitted to Morton International, Inc. and Parsons OM&M Managers.

4.8 Quality Control

Internal QC procedures include both field and laboratory check samples and procedures designed to ensure and document the overall quality of the data. QC check samples are control samples introduced into the analytical system at specific points. The results of the QC checks are used during data assessment to evaluate precision, accuracy, representativeness, completeness, and comparability of the overall sampling and analytical program. The type and frequency of QC check samples required for this project are summarized in **Table 7**.

4.8.1 Field Quality Control Checks

To verify the performance of field sampling activities, QC samples are collected for analysis. Field QC checks consist of control samples that are introduced to the laboratory from the field. The sampling team will use several types of QA/QC samples to ensure and document the integrity of the sampling procedures, sample-handling procedures, and the validity of the measurement data. Primarily these field-generated QC samples will be field rinsate blanks, trip blanks, field duplicates, and temperature blanks. Frequency of QC collection is summarized in **Table 7**. Bottles and blank water will leave the laboratory and arrive back at the laboratory within seven days.

Additional QC and blank samples will be introduced on an as-needed basis to address

specific project needs. For example, additional blanks may be warranted in cases where contamination is indicated and the currently-planned samples do not provide sufficient information to allow identification of the source and institution of corrective actions. Additional field-generated QC samples that may be utilized on an as-needed basis include:

- Storage blanks blanks that accompany bottle storage, particularly bottles maintained under onsite conditions;
- Bottle blanks to ensure that the bottles provided are sufficiently cleaned and are not contaminated:
- Field blanks water opened and poured under field conditions without rinsing equipment to differentiate between contamination due to ambient site conditions versus inadequate equipment decontamination;
- Performance Evaluation (PE) samples- samples of known and well-defined concentration provided to the laboratory as independent assurance of laboratory performance; and
- Blind spikes samples spiked in the field with known concentrations and provided to the laboratory along with routine samples.

Field blank water and trip blanks will be shipped with the sample containers and arrive onsite within one day of preparation. Blanks and the associated samples will be held onsite for no longer than two calendar days and will arrive at the laboratory within one day of shipment from the field. Blanks and samples will be maintained at 4°C while stored onsite and during shipment. Sample bottles and blanks will be handled in the same manner prior to their return to the laboratory.

Field Rinsate Blanks

Equipment rinsate (i.e., equipment) blanks will be prepared to determine if cross-contamination has occurred during sampling. Two sets of identical bottles, one set containing analyte-free water and one empty set, will be provided by the laboratory. The analyte-free water from the set of bottles is poured over or through one set of field sampling devices utilized to collect samples following decontamination of the equipment. This water is then collected into the empty set of bottles. Rinsate blanks will be preserved in the same manner as aqueous samples. For non-aqueous samples, rinsate blanks will be prepared at a frequency of one per 10 of the total number of samples collected or one per day, whichever is less frequent. Rinsate blanks for aqueous samples will be collected at a rate of one per day. However, since rinsate blanks require rinsing of the equipment, sample collection methods that do not utilize sampling equipment cannot, by definition, have a rinsate blank. In these cases field blanks will be collected at the

same frequency as rinsate blanks. The rinsate blank will be analyzed for the same parameters as the associated samples. This will include collecting filtered rinsate blanks when water samples are being collected for dissolved metals. This blank will consist of laboratory deionized water passed through the filter apparatus in the field. The filtered rinsate blanks will be collected and analyzed at the same frequency as the rinsate blanks, but only for association with the field-filtered (dissolved) metals samples.

Trip Blanks

To determine if cross-contamination of samples has occurred during shipping, one trip blank will be provided by the laboratory for each shipment of aqueous samples for volatile analysis. Trip blanks are not required for non-aqueous samples. Trip blank samples are prepared by the laboratory and consist of at least two 40-ml vials filled with analyte-free water. Trip blanks will be returned to the laboratory unopened with the same set of bottles they were shipped with and will not be held onsite for more than two calendar days. All trip blanks will be analyzed for volatile organic parameters (including volatile alcohols) only.

Field Duplicates

Field duplicate samples will be collected to evaluate the reproducibility of the sampling technique. Field duplicate samples will be collected for each matrix at a rate of 1 for every 20 samples per matrix. If fewer than 20 samples are collected during a particular sampling event, 1 field duplicate will be collected.

Temperature Blanks

Temperature blanks will be shipped with liquid samples (one for each cooler) for confirmation of shipping conditions/temperature.

4.8.2 Laboratory Quality Control Checks

Laboratory QC checks include the analysis of blanks, spiked samples (laboratory control samples, matrix spikes, and matrix spike duplicate samples), duplicate samples (inorganics only), surrogates (organics only), and initial and continuing calibration checks. The laboratory will maintain a QC program that will contain, at a minimum, those QC checks listed in **Table 7** and described briefly below. Criteria that laboratory blank and spiked sample analyses must meet are also summarized in **Table 9**. Laboratory QC samples will be checked against analytical method and data usability requirements during the usability review process.

Method Blanks

Method or preparation blanks are generated within the laboratory during the processing of the field samples. These blanks are processed using the same reagents and procedures and at the same time as the samples being analyzed. Contamination found in method blanks indicate that similar concentrations found in associated samples may be attributable to the same source of contamination and not actually present in the field samples. Method blanks will be analyzed at a minimum frequency of 1 per 20 samples per matrix or per preparation/analysis batch. Criteria for acceptance of method blanks are method-specific.

Analytical blanks (Initial Calibration Blank [ICB] and Continuing Calibration Blanks [CCB]) are required by inorganic USEPA methods and as QC defined in the QAPP. Blanks consist of laboratory reagent-grade water and acid solutions to match sample digestates analyzed at the beginning, at intervals during, and at the end of an analytical sequence to assess contamination and instrument drift. The ICB is analyzed at the beginning of the analytical run following the calibration and initial calibration verification (ICV). The CCB is analyzed prior to sample analyses, every 10 samples thereafter, throughout the analytical run, and at the end of the analytical sequence.

Matrix Spikes and Matrix Spike Duplicates

Matrix spike (MS) samples are prepared by placing a known quantity of target analytes into a field sample. The MS is then processed in a manner identical to other samples. Percent recovery of each target analyte reflects the ability of the laboratory and method to accurately determine the quantity of that analyte in that particular sample. Note that it does not necessarily reflect the ability to determine that analyte or other chemically similar analytes in other, even similar samples. If a quantity of the spiked analyte exists in the sample prior to addition of the spike, this quantity is subtracted from the matrix spike results to determine the quantity of the spike that has been recovered.

Matrix spike duplicate (MSD) samples are prepared for all organic analyses as QC checks on the precision. MSDs are prepared and handled identically as matrix spikes. The relative percent difference (RPD) is a measure of the comparability of the MS and MSD results and, thereby, provides a measure of analytical precision. For all organic analyses, an MS/MSD pair will be prepared and analyzed at the frequency of 1 per 20 samples per matrix or per preparation/analytical batch.

Laboratory Duplicates

For inorganic analyses, a laboratory duplicate (LD) is prepared and analyzed to provide a measure of precision by comparing the RPD of all positive results in the sample and LD. A sample/LD pair will be analyzed at a frequency of 1 per 20 samples per matrix or per preparation/analytical batch. RPD criteria for LD samples are analyte- and method-specific and are summarized in **Table 9**.

Surrogate Spikes

Analytical samples to be analyzed for organic analyses will have surrogate compounds added before analysis or extraction. The recovery of these surrogate compounds aids the analyst in determining matrix effects on recovery of compounds in each sample.

<u>Laboratory Control Samples</u>

Laboratory Control Samples (LCSs) are samples prepared by adding known amounts of analytes to a blank matrix. LCS samples are analyzed concurrently with project samples. The recovery of analytes in LCSs measures the ability of the method and laboratory to accurately quantify target analytes without the presence of matrix effects or interferences. An LCS is prepared and analyzed at the frequency of 1 per 20 samples per matrix or per preparation/analytical batch.

Calibration Criteria

Calibration checks will be performed according to the method-specific requirements but are summarized below. Calibration criteria specifics are detailed in the individual analytical methodologies.

Organic Analyses:

- Multilevel (typically five-point) initial calibrations of instruments to establish calibration curves;
- Continuing calibration standards at least once every 12 hours of gas chromatography / mass spectrometry (GC/MS) instrumental analyses and once every 20 samples or 12 hours of GC instrumental analysis; continuous calibration standards at the end of analysis to ensure continued, accurate quantitation; and
- Instrument tuning of GC/MS systems every 12 hours using bromofluorobenzene for volatile analyses and decafluorotriphenylphosphine for semi-volatile analyses.

Inorganic Analyses:

- Calibration curves generated by analyses of individual or mixed standards;
- Initial calibration verification at the beginning of each run and continuing calibration verification at a minimum frequency of 1 every 10 samples to verify calibration; and
- Inductively coupled plasma interference check standards after initial calibration to verify inter-element and background corrections.

Performance and system audits of both field and laboratory activities will be performed on a periodic basis, as appropriate, to ensure that the sampling and analysis are performed in accordance with procedures outlined in the NJDEP *Field Sampling Procedures Manual* (August 2005) and this remedial action QAPP.

4.9 Performance Audits

4.9.1 Internal Performance and System Audits

Members of the project team may perform documented internal audits of project activities prior to or during the course of the analytical program as part of a proactive approach to ensure that the project's DQOs are met, as necessary. Follow-up audits to assess corrective actions to specific findings may be performed. Audits will consist, as appropriate, of an evaluation of QA procedures and the effectiveness of their implementation, an evaluation of work areas and activities, and a review of project documentation. Audits will be performed in accordance with written checklists. Audit results and any follow-up response from the audited activity will be formally documented and maintained in the respective project files. The parties responsible for performing the audits are specified in **Section 4.9**.

4.9.2 External Performance and System Audits

Laboratory and field activity audits may be performed prior to or during the course of the analytical program as part of a proactive approach to ensure that the project's DQOs are met, as necessary. If performed, the audits will be conducted by the parties identified in **Section 4.9**. Each laboratory has previously undergone, or will undergo, prior to analysis of samples, a comprehensive onsite audit.

External audits of laboratory or field activities during the project may be performed at a frequency to satisfy the project team that the sampling and analysis is progressing within the QA/QC limits set forth in this QAPP and as defined in the OM&M Plan and the referenced USEPA methods.

Specific elements of the field oversight/audit will include verification of the following items:

- completeness and accuracy of sample COC forms, sample identification labels, and field log books;
- compliance with the specific decontamination procedures as delineated in the Work Plan:
- compliance with the specific collection, preparation, preservation, and storage procedures outlined in this QAPP;
- compliance with the specific calibration and analytical procedures for field measurements as outlined in this QAPP; and
- compliance with the handling and shipping procedures outlined in this QAPP.

On-site laboratory audits may be performed during the program for one or more of the following reasons:

- Significant changes are made to the QAPP;
- Data Acceptability Review (DAR) or other review documentation indicates a problem;
- To verify that corrective action has been taken on a nonconformance or QA/QC problem in the laboratory; and
- An audit is specifically requested by the senior representatives of the project team.

The following represent some of the significant items that are to be included in the checklist for a full-scale audit of a laboratory by external auditors:

- Sample flow through laboratory and internal sample tracking;
- COC procedures;
- Sample storage;
- Sample preparation/extraction and analysis information;
- SOPs:
- Log books or benchsheets for all preparation and analytical procedures of samples, calibration standards QC standard/check samples, blanks;
- QC sample documentation inclusive of items above and for all blanks, calibrations, calibration verification check samples, LCS, spikes, duplicates, spike

duplicates, surrogates, control charts (where applicable);

- Hard copy of all data, other media (disk, tape, etc.); and
- Laboratory QA procedures including internal audits, corrective action forms and QC control charts.

After completion of an external audit, the auditor(s) will prepare and submit an audit report for distribution to the project team. The report will be prepared as soon as possible after the audit and contain the following, as appropriate:

- Date(s) of the audit;
- Identification of audit participants;
- Audit results;
- Description of items requiring corrective action and, if possible, the means of correction; and
- Due date for completion of corrective actions and/or audit response.

The individuals audited will respond in writing to the audit report. The response will clearly state the corrective action(s) taken or planned. If all corrective actions have not been completed prior to issuance of the audit response, a scheduled date for completion will be mandated. All requests for corrective action must be addressed to the satisfaction of the respective QA Officer.

Completion of corrective action will be verified by the auditor(s) through written communication, re-audit, or other appropriate means. After acceptance and verification of corrective actions, an audit closure report will be issued by the audit team leader.

4.10 Data Management / Reporting

Data collected during the Ventron/Velsicol OU-1 remedial action activities, including field and laboratory activities, will be recorded, reduced, reviewed, and reported. Parsons is responsible for these functions for field sample collection and for all field-generated analytical data. Each offsite contract laboratory receiving field samples is responsible for the recording, reduction, reviewing, and reporting of the corresponding analytical results. Designated aspects of the data review and assessment requirements are assigned to members of the remedial action team.

Raw data consists of instrument responses in the form of meter, recorder, or printer output. The technician/operator performing the analysis either will enter the field or bench-generated data in a field or laboratory workbook/worksheet specific for each parameter or will reduce the data via specific computerized software programs. These data must include: instrumental responses (absorbances, concentrations, etc.), standard and spike concentrations, sample identification numbers, and all other pertinent

information. All reductions of data, whether manual or computerized, must follow the procedures and equations provided in the respective testing protocols. The reduction of field data will consist of summarizing the raw field data, which may be presented in the form of tables, logs, illustrations, and graphs, as deemed appropriate by the task manager.

For laboratory analyses in which the raw data consist of instrument responses in the form of computer-generated data files, data output should be stored by the laboratory in project-specific files. The computer-generated data files must be archived electronically for possible retrieval at a later date.

The field measurement data will be reduced into a tabulated format suitable for inclusion in the annual and biennial certification reports and will be designed to facilitate comparison and evaluation of the data. These tabulations will include, but not be limited to, the following information:

- Field screen results:
- Field analyses (e.g., pH, temperature);
- Well construction details: and
- Water-level measurements and surveyed measuring point elevations.

Field logs will be transferred into typed formats or organized in their original form for inclusion in the annual and biennial certification reports as appendices. The following log forms will be used:

- Water level logs;
- Water sampling logs; and
- Water level/pumping test record logs.

The tables and logs will be compiled, whenever feasible, by the field team leader, who will inform the OM&M manager of any problems encountered during data collection, identify apparent inconsistencies, and provide opinions on the data quality and limitations.

4.11.1 Quality Assurance Data Review

A quality assurance review of data for all chemical analyses of samples collected as part of OM&M will be conducted in a manner consistent with the procedures used for the remedial investigation / feasibility study portion of the project. The quality review will be conducted to verify that all required laboratory quality control procedures were completed and documented and that the quality of the data is sufficiently high to support the intended purpose. Data validation procedures and qualifier assignments will be completed according to the USEPA national functional guidelines for evaluating

inorganic and organic analyses (USEPA 1994), as applicable. Quality review parameters are air and ground water samples are summarized in **Table 9**.

Data quality is assessed by PARCC. The applicable requirements and levels of effort for assessing data quality are dictated by the intended use of the data and the nature of the analytical methods. Definitions of these parameters and the methods that will be used to evaluate them for this investigation are described in this section.

Precision

Precision is a measure of reproducibility of analyses under similar conditions. Precision can be defined as the degree of mutual agreement among individual measurements and represents an estimate of random error. Precision values will be calculated as the RPD between laboratory or field duplicate sample results or between the matrix spike (MS) and matrix spike duplicate (MSD) concentrations. The equation is as follows:

$$RPD = \frac{|C1 - C2|}{(C1 + C2)/2} \times 100\%$$

where: C1 = concentration of sample or MS C2 = concentration of duplicate or MSD

If all analytical specifications are satisfied and sampling error is not suspected, the RPD results may indicate variability in the matrix. RPD results should be used to initiate further evaluation but are not necessarily considered to be indicators of the state of control during analysis or of field conditions. Estimated qualifier flags may be assigned for samples or matrices with high RPDs to indicate sample heterogeneity or high matrix variability rather than a data quality problem. An average RPD may be calculated and reported as a measure of overall analytical precision or matrix variability for methods and analytes with many duplicate samples or analyses. Target RPDs for air and water samples are presented in **Table 9**.

Accuracy / Bias

Accuracy is the degree of agreement between a measured value and the "true" or expected value. As such, it represents an estimate of total error from a single measurement, including both systematic error (or "bias"), and random error that may reflect variability due to imprecision. Accuracy is expressed in terms of percent recoveries determined from results of the MS/MSD sample pair or Laboratory Control Sample (LCS) analyses. Additionally, accuracy will be evaluated for each sample through the percent recoveries of surrogate spikes. Accuracy is also dependent upon method and field blanks, which should be non-detect for all target analytes. For the determination of accuracy, the following equation is used:

Percent Recovery = <u>measured concentration</u> x 100% actual (known) concentration

Ranges for accuracy (bias) which can routinely be achieved by an analytical laboratory for air and water samples are presented in **Table 9**.

Representativeness

Representativeness is the degree to which sample data accurately and precisely expresses the characteristics of a population of samples, parameter variations at a sampling point, or an environmental condition. It is a qualitative parameter that is achieved through proper sampling program design using appropriate strategies and techniques. Factors that can affect representativeness include site homogeneity, sample homogeneity at a single point, and available information around which the sampling program is designed. The field-sampling program has been designed to maximize representativeness of the selected sampling locations. To assure representativeness in field sampling, several controls will be used during the course of sampling, including the use of field rinsate samples, and the use of trip blanks for volatiles.

Appropriate sub sampling procedures shall be employed by the laboratory so that homogenous, representative sample aliquots are analyzed. A sample preparation log shall be maintained to document which sub sampling procedures were used for each sample. The method or preparation blank is used to determine whether or not contaminants are present in the laboratory that could have an impact on the sample associated with the method blank. The presence of contaminants gives the possibility for false positive results. Data quality assessment will eliminate the false positive results attributable to blank contamination. False negatives are reduced through the proper use of sample preservatives, containers, and holding times. All liquid samples will be preserved at the time of sampling by the addition of required chemicals, through refrigeration or both. The use of preservation limits biological and chemical degradation

that could bias sample results. Soil and water samples will be refrigerated and stored between 2°C and 6°C.

Completeness

Completeness can be defined both qualitatively and quantitatively. Qualitative completeness is determined as a function of all factors that contribute to sampling. Quantitative completeness is calculated as the percentage of measurements that are judged to be valid compared to the total number of measurements planned. Effectively, it measures the amount of data available for valid measurements compared to the amount that is lost or destroyed. For this investigation, a completeness factor of 90 percent for all matrices is established, and is strictly defined as the ratio of the number of usable data points (not flagged "R") over the total possible number of data points, by method/matrix. The completeness factor for air and water samples is presented in **Table 9**.

Comparability

Comparability is a qualitative indicator of the confidence with which one data set can be compared to another. Confidence is achieved by maintaining standard techniques and procedures for collecting and analyzing representative samples and reporting the analytical results in standard units. In addition, comparability between sample data from similar samples is maintained by using standard procedures and standard solutions and materials. Comparability is expressed in qualitative terms by assuring that standard methods are used for all analytical chemistry measurements, samples are collected and analyzed following approved procedures, and sample results are reported in industry standard units appropriate to each method.

4.11.2 Laboratory Data Review

First Level Review

The laboratory analyst generating the analytical data has the prime responsibility for the correctness and completeness of the data. Laboratory data will be generated and reduced following protocols specified in the appropriate USEPA SW846 methods or other approved method referenced in this QAPP. The review conducted by the laboratory analyst constitutes the first-level review. At a minimum, the primary analyst will review the data package to ensure that:

- Analysis information is correct and complete;
- Appropriate test method was used;
- Analytical results are correct and complete (including calculations);
- QC samples are within established control limits;

- Blanks are within established control limits:
- All corrections on raw data and any generated forms are appropriately documented; and
- Raw data, calculations, and results are correctly transcribed.

This review is documented by the analyst and included with the data package. In the case of work performed by subcontracted laboratories, the first-level review would be performed by the subcontracted laboratory.

Second Level Review

The laboratory will also conduct a secondary review of the data as an independent and detailed review to ensure that the data set is acceptable for release. The secondary review process will ensure that:

- COC information is correct;
- Holding times were met, or exceeded holding times will be documented in the case narrative;
- Sample preparation information is correct and complete;
- Analysis information is correct and complete;
- Appropriate SOPs have been followed;
- Analytical results are correct and complete (including calculations);
- QC samples are within established control limits;
- Blanks are within established control limits;
- Special sample preparation and analytical requirements have been met;
- Documentation is complete;
- Corrections on raw data and any generated forms are appropriately documented; and
- All documents have been initialed and dated in accordance with laboratory SOPs.

The secondary review must be conducted by experienced laboratory personnel who perform data review as a primary function, are organizationally separate from the operating analysts, and have direct access to the laboratory's QA Manager. Any errors found in this review should trigger appropriate actions resulting in the correction of the data. The secondary review process must be documented in the data package.

In the case of work performed by subcontracted laboratories, the data must be reviewed and approved by the primary laboratory in a manner similar to their secondary review process.

Third Level Review

The third level of review for laboratory data is accomplished by the Laboratory Project Manager during preparation of the final laboratory report. A Case Narrative will be prepared for each data report as documentation of the review. This narrative will include comments as appropriate for the proper interpretation of the data as reported. The signature of the Laboratory Project Manager, Laboratory Director, or designated senior QA staff on each report constitutes acceptance and release of the report from the third-level review.

Compliance Review

A basic compliance review will be conducted by the data assessment manager to ensure completeness and deliverable compliance with method and contractual requirements for each data report submitted by the laboratory. This review will be conducted primarily to confirm contractual compliance by the laboratory and will include the following:

- Comparison of the laboratory work request and COC information with the submitted results;
- Verification of holding times for each sample and analytical fraction; and
- Verification of the report's delivery within the contractual window.

Data Acceptability Review (DAR)

A DAR will be conducted by the Parsons data assessment manager on approximately 10 percent of the data reports received from the laboratory. The DAR is intended as a tool to monitor laboratory performance with respect to contract issues and method requirements in a timely manner. This review is intended to be completed and reported within five working days after receipt of data. The results of the DAR report will be communicated to Morton and to the Laboratory Project Manager for immediate action, as needed. The time factor in this review process is important in order to influence laboratory activities while they are still analyzing samples for the project. With this in mind, most of the data reports submitted for a DAR will represent the first ones produced by the laboratory for a given sampling program unit.

The DAR will consist of a checklist review to determine if the data met the program's DQOs. The checklist employed will essentially serve as a portion of the Usability Assessment as described below. At a minimum, the DAR will include: data package completeness review; review of the CLP-like summary forms to determine if the QC requirements were met for accuracy and precision; overall review of the data package to determine if contractual and method requirements were met; and review of one sample per fraction to determine if the sample results and quantitation limits were correctly calculated and reported.

The data reviewers will communicate to Morton's Project Manager any data quality problems or issues uncovered during the DAR and will assist in interacting with the laboratory to correct any data omissions and/or deficiencies.

4.11.3 Field Data - Review

The tables and logs compiled by the field team leader and used as the basis for data interpretation, will be checked against the original field documentation by an independent reviewer prior to inclusion in the annual and biennial certification reports. Parsons is responsible for coordinating and documenting this review activity.

4.11.4 Data Usability Assessment

A data usability assessment (DUA) will be performed by Parsons in compliance with USEPA Level 3 specifications under the guidelines set forth in the "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", 1999; "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review", 2004; "Region 2 RCRA and CERCLA Data Validation Standard Operating Procedures (SOPs)", and NJDEP technical requirements, with consideration for the methodology requirements and the site-specific requirements. The DUA will be conducted by Parsons on all data reports for TAL/TCL or reduced Morton's analyte list analyses. The data evaluation will include performance and completeness audit and a review of the following parameters: holding times, sample preservations, percentage of solids, QC results of calibration, method blanks, MS/MSD analyses, laboratory control sample performances, field duplicates, surrogate recoveries, instrument performance, chromatograms and mass spectrums, internal standard recovery, and reporting limits. In performing the data validation, the raw data will be spot-checked in accordance with the Region 2 SOPs to evaluate whether there is any transcription error. In addition, the following items will be reviewed during the data usability assessment:

- COC documentation to verify completeness of the data;
- The case narrative discussing analytical problems (if any) and procedures;
- Sample preparation logs or data summary sheets to verify analytical holding times:
- Applicable instrument tuning, instrument calibration, and calibration blank results to assess instrument performance;
- Applicable instrument blanks and method blanks associated with each sample delivery group to check for laboratory contamination;
- Results for all laboratory quality control samples used to check analytical accuracy, including matrix spikes, laboratory control samples (LCSs), and

- method-specific quality control samples for organic compounds (i.e., surrogate compounds and internal standards) and metals (i.e., interference check samples, serial dilution of field samples, and analytical spikes);
- Results for all quality control samples used to check analytical precision, including duplicate sample analysis for metals, and instrument-specific quality control procedures for metals (i.e., duplicate analyses of all sample digestates); and
- Reporting limits for all target analytes to verify that project requirements were met.

4.11.5 Laboratory Deliverable Format

Analytical results will be reported in the units specified in **Table 9**. Soil and sediment results will be reported on a dry-weight basis. The data package deliverable format for analytical data will follow a CLP-like format and will include:

- Title page and table of contents;
- Sample control data;
- COC documents;
- Laboratory work request;
- Air bill;
- Laboratory sample log-in sheets;
- Inter-laboratory sample transfer records;
- Method reference and methodology review;
- Case narrative nonconformance summary report;
- Analysis data sheet (for each sample);
- Information similar to CLP Form 1;
- Method detection/reporting limit;
- Quality control summary;
- Reagent blank summary;
- Duplicate summary including RPD (when specified);
- MS/MSD summary including percent recovery (when specified);
- Calibration summary;
- Raw QC and standards data;
- Initial calibration data;
- Continuing calibration data (where specified by method);
- Reagent blank data;

- Matrix spike data;
- Duplicate data;
- Raw sample data; and
- Sample preparation (extraction) logs.

4.11.6 Electronic Submission

Diskette deliverables will be required for all laboratory analytical results delivered for the Ventron/Veliscol OU-1 project. These deliverables will be in a project-specific format to facilitate uploading into the project database (EQuIS Data Management System). Laboratory data formatting and delivery protocols will adhere to Morton CRG document, "Laboratory Date Reporting Protocol" (Doc. No.: CRG-023). These deliverables will be in a project-specific format to facilitate uploading into the project database. The diskette format and content requirements will be coordinated with the laboratories to facilitate efficiency in the transfer of data. Any diskette deliverable provided to the project as a modification, revision or update to a previously distributed diskette must be appropriately marked and documented.

The analytical data diskette deliverable received along with the laboratory report (hard copy) deliverable for use in the data review and assessment processes, will be reviewed by Parsons.

4.11.7 Distribution of Reports and Diskette Deliverables

Parsons will submit field information on a regular basis to the data manager. The laboratory will provide the data validation personnel (Parsons) with the hard copy deliverable and will send the electronic deliverable to the Parsons database manager. After conducting the DAR, the hard-copy report will be forwarded to the Morton International Project Manager upon completion of the review. After conducting complete data usability assessments as required, complete final reports will be provided by the data assessment manager to Morton.

4.11.8 Project Database

A project database (EQuIS) has been developed to meet users' (e.g., remediation engineers, risk assessors) needs (CRG data management website). This system is designed to maintain and integrate field information (e.g., station location, construction information, sampling team), analytical information (e.g., results, laboratory qualifiers, analysis dates), and data assessment information (e.g., assessment status, qualifiers).

4.11.9 Electronic Submission of Data to the NJDEP

The results of environmental sample analysis will be submitted to the NJDEP Site Remediation and Waste Management (SRWM) in an electronic format. Every sample point will be geographically referenced using approved accuracy standards. NJDEPs GIS capability requirements can be reviewed at http://www.state.nj.us/dep/gis link to *Digital Data Standards and Guidance for the Submission and Use of Data in GIS Compatible Formats Pursuant to Technical Requirements for Site Remediation* (TECHGIS2) at http://www.state.nj.us/dep/srp/regs/guidence.htm#techgis2. Prior to conducting sampling, the type and format of data that is required to be submitted to the Site Remediation Program (SRP) as well as other information that will be collected in the field such as geographic location of sampling points will be considered.

Three files will be submitted: HZSAMPLE contains field sampling information; HZRESULT contains analytical results; DTST identifies the data submission. The complete requirements are outlined in detail at http://www.state.nj.us/dep/srp/hazsite. The website will be assessed prior to preparing the data to ensure that the latest requirements are met as the website is updated periodically. Once samples have been collected and data prepared, the data will be run through the "Environmental Data Submittal Application Checking" (EDSA) program to determine compliance with data requirements.

4.12 Corrective Actions

The QA/QC program contained in this QAPP will enable problems to be identified, controlled, and corrected. Potential problems may involve nonconformance with the sampling and/or analytical procedures established for the project or other unforeseen difficulties. Any persons identifying an unacceptable condition will notify the Parsons Field Team Leader, where applicable, and/or the individual Project Managers. The OM&M Manager, with assistance from the Field Team Leader, will be responsible for developing and initiating an appropriate corrective action and verifying that the corrective action has been effective. For laboratory analysis, both the identified deviations and corrective actions will be documented.

4.12.1 Field Corrective Action

Wherever possible, corrective actions will be implemented immediately and documented in the field log book. No other formal documentation will be required unless further corrective action is taken.

Problems that cannot be solved through immediate corrective action will be documented on a Field Corrective Action Form by the person identifying the unacceptable condition.

This form identifies the problem, possible causes, and the person responsible for acting on the problem.

The Corrective Action Request form includes a description of the correction action planned, the date it was taken, and space for follow-up. The Parsons Project Manager will check to be sure that initial action has been taken, appears effective, and at an appropriate later date check again to see if the problem has been fully solved. Morton's Project Manager or designee will receive a copy of all Field Corrective Action forms.

Corrective actions may include repeating measurements, resampling, and/or reanalysis of samples, and amending or adjusting project procedures. If warranted by the severity of the problem (e.g., if monitoring wells require resampling or if the project schedule may be affected), Morton's Project Manager will be notified. Additional work that is dependent upon a questionable activity will not be performed until the problem has been eliminated

4.12.2 Laboratory Corrective Action

Nonconformities or discrepancies may be found that affect the validity or quality of analytical data. Corrective actions will be implemented to correct the deficiency or weakness and to identify any analytical data that may have been affected. Wherever possible, immediate corrective action procedures will be employed. Immediate corrective actions taken must be noted in laboratory logbooks, but no other formal documentation is required unless further corrective action is deemed necessary. If a problem persists or cannot be readily identified, a formal corrective action procedure will be initiated. The Laboratory QA Manager shall use this procedure to provide that the condition is documented and tracked until the problem has been fully resolved.

A laboratory Corrective Action form will be completed by the person finding the quality problem. This form identifies the problem, possible causes, and the person responsible for acting on the problem. The responsible person may be an analyst, supervisor, or the Laboratory QA Manager. If no person is identified as responsible to implement the corrective action, the Laboratory QA Manager will investigate the situation and determine the course of action for resolution.

Activity	Performed By	Action Officer Receiving Report
Field activity audit (internal)	Parsons	Parsons and Morton Project Managers
Field activity audit (external)	Parsons/Morton International, Inc.	Parsons and Morton Project Managers
Laboratory audit (internal)	Laboratory	Laboratory QA Officer
Laboratory audit (external)	Morton	Morton Project Manager
Data Compliance Review	Data Assessment Manager	Morton Project Manager
Data Acceptability Review	Data Assessment Manager	Morton Project Manager
Data Usability Assessment	Data Assessment Manager	Parsons and Morton Project Managers

The Corrective Action form includes a description of the corrective action planned, the date it was taken, and space for follow-up. The Laboratory QA Manager will check that initial action has been taken, appears effective, and at an appropriate later date, will check again to see if the problem has been fully resolved. Inspection of corrective actions will be performed during laboratory audits.

4.12.3 Variances

Variances from standard, approved field operational procedures and plans will be documented. It is recognized that Work Plans cannot possibly foresee all conditions encountered during a field program. A variance is a difference or a partial change in a procedure or plan.

Formal approval of the variance will be given in writing, signed, and dated as approved by the Morton Project Manager and Parsons OM&M Manager, as necessary, for the type of variance proposed. The variance should be evaluated to determine if it requires formal approval through the NJDEP per N.J.A.C. 7:26E-1.6(d).

Data collection activities will be documented through the use of field log forms and log books. These field records will be reviewed and included in the project file. The QA reports prepared by the analytical laboratory will include the appropriate analytical data, the results of the QC samples, and a description (case narrative) of problems encountered and the corrective action taken. The reports or summaries from these and the other QA reviews, assessments, and audits will be forwarded for action to the appropriate project officer and project files as indicated below.

These QA reports will be reviewed to determine the quality and limitations of the data and to provide feedback to the appropriate operating unit to implement improvements or corrective action immediately or in the future as the individual situation demands.

4.12.4 Field Sampling Changes

In order to provide for personnel and equipment safety and maintain continuity of ongoing work, the following practice for documenting and approving field changes to technical plans and procedures will be used.

Field changes are required and permitted under circumstances wherein failure to approve such a change would:

- Endanger personnel;
- Damage equipment;
- Harm the environment; and/or
- Interrupt collection of irretrievable data.

Field changes may be recommended by any project personnel but will be initially assessed by the Parsons Field Team Leader and communicated to the Parsons Project Manager and QA Officer for approval.

Within five business days of verbally approving a critical field change, a formal written record of the change will be prepared by the Parsons Field Team Leader, QA Officer, or Project Manager, and submitted to the Morton Project Manager or designee.

Section 5 – References

Environmental Protection Agency. 1980. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-005/80.

Environmental Protection Agency. 1983. Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-OO5/80.

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Environmental Protection Agency. 1987. Data Quality Objectives Development Guidance for Uncontrolled Hazardous Waste Site Remedial Response Activities. OSWER Directive 9355.0- 7B. Washington, D.C. Hazardous Site Control Division. USEPA/540/G-87-003.

Environmental Protection Agency. 1988a. Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA.

Environmental Protection Agency. 1992a. Guidance for Data Usability in Risk Assessment. Office of Emergency & Remedial Response.

Environmental Protection Agency. 1994. Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.

New Jersey Department of Environmental Protection. 2001. *Quality Assurance Data Validation of Analytical Deliverables - TCL - Organics* (based on the USEPA SOW OLM04.2 with revisions). SOP NO. 5.A.13. Revision No.3.

New Jersey Department of Environmental Protection. 2005. Field Sampling Procedures Manual.

New Jersey Department of Environmental Protection. 2002. *Quality Assurance Data Validation of Analytical Deliverables for Inorganics* (based on USEPA SW-846 Methods). SOP NO. 5.A.16. Revision No.1.

New Jersey Department of Environmental Protection. 1992c. SOP for the Completion of the CLP Data Validation Report Forms and the Preparation of the Final Data Validation Report. SOP NO. 5.A.15. Revision No. O.

New Jersey Department of Environmental Protection. 1996. *Guidance for Preparation of a Project Specific Quality Assurance Project Plan.* Version 1.0. March 3.

Table 1 – Site-Related Soil Contaminants and Remediation Goals Ventron/Veliscol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

Compound	RDCSCC (mg/kg)	RDCSRS (mg/kg)	Residential Goal (mg/kg)	NRDCSCC (mg/kg)	NRDCSRS (mg/kg)	Non-Residential Goal (mg/kg)
Arsenic	20	19	20	20	19	20
Bis(2-ethylhexyl)phthalate	49	35	49	210	140	210
Chrysene	9	62	62	40	230	230
Copper	600	3,100	3,100	600	45,000	45,000
Lead	400	400	400	600	800	800
Mercury	14	23	23	270	65	270
Thallium	2	5	5	2	79	79

Notes:

- 1) RDCSCC Residential Direct Contact Soil Cleanup Criteria
- 2) RDSCSRS Residential Direct Contact Soil Remediation Standard
- 3) NRDCSCC Non-Residential Direct Contact Soil Cleanup Criteria
- 4) NRDSCSRS Non-Residential Direct Contact Soil Remediation Standard
- 5) Soil remediation goals are based on phased in soil cleanup criteria guidance provided by the NJDEP in conjunction with the revisions made to N.J.A.C. 7:26D and N.J.A.C. 7:26E-1.3(d) on June 2, 2008

Table 2 – Site-Related Ground Water Contaminants and Remediation Goals Ventron/Veliscol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

Compound	NJ Ground Water Remediation Standard (ug/L)
Arsenic	3
Benzene	1
Mercury	2

Table 3 - QC Testing Requirements - Undeveloped Area Cap Ventron/Velsicol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

Material	Required Test	Test Method	Frequency	Acceptance Criteria
DGA	Certification as complying with NJDEP Unrestricted Use Criteria	NJAC 7:26E- 6.4(b)2iv-vi	Per source	Certification received from approved independant analytical testing laboratory.
	Grain Size Analyses	ASTM D422	1/1,000 cy or per visual or textural change in material	100 percent passing the 4-in. sieve; 50% - 70% passing the No.4 sieve; 25% - 60% passing the No. 40 sieve;
	Moisture Content	ASTM D2216	1/1,000 cy or per visual or textural change in material	Less than or equal to 30% passing the No.200 sieve. For Documentation
	Modified Proctor Moisture Density	ASTM D1557	1/1,000 cy or per visual or textural change in material	For Documentation
	Horizontal Limits and Thickness	Measured	Continuous observation	For Documentation
	In-place Moisture Content	Visual	Continuous observation	Subgrade and restored area is firm and free of soft/unstable wet areas
Biotic Barrier Stone (NJDOT#1)	Certification as complying with NJDEP Unrestricted Use Criteria	NJAC 7:26E- 6.4(b)2iv-vi	Per source	Certification received from approved independant analytical testing laboratory.
	Horizontal Limits and Thickness	Measured	Continuous observation	For Documentation
	Grain Size Analyses	ASTM D422	Per source	100 percent passing the 4-in. sieve; 90% - 100% passing the 3 1/2-in sieve; 25% - 60% passing the 2 1/2-in sieve; 0% - 15% passing the 1 1/2-in sieve; 0% - 15% passing the 3/4-in sieve.
Barrier/Separation Layer Fill	Certification as complying with NJDEP	NJAC 7:26E-	Per source	Certification received from approved independant analytical testing laboratory.
	Unrestricted Use Criteria	6.4(b)2iv-vi		
	Grain Size Analyses	ASTM D422	1/1,000 cy or per visual or textural change in material	ASTM soil group classifications SC, SC-SM, CL, CL-ML, and ML
	Moisture Content	ASTM D2216	1/1,000 cy or per visual or textural change in material	For Documentation
	Atterberg Limits	ASTM D4318	1/1,000 cy or per visual or textural change in material	For Documentation
	Modified Proctor Moisture Density	ASTM D1557	1/1,000 cy or per visual or textural change in material	For Documentation
	Horizontal Limits and Thickness	Measured	Continuous observation	For Documentation
	Tube Permeameter Test	NJAC 7:9A- Section 5.2	1/1,000 cy or per visual or textural change in material	permeability equal to 10 ⁻⁵ cm/sec or less
Topsoil	Grain Size Analyses	ASTM D422	1/1,000 cy or per visual or textural change in material	No stones greater than 2" in diameter
	Organic Content	ASTM D2974	1/1,000 cy or per visual or textural change in material	Minimum organic content: 2.75% Maximum organic content :5.0%
	Soil Nutrient Analysis	ASTM D2974	1/1,000 cy or per visual or textural change in material	For determination of limestone, fertilizer, organics and/or sand and silt material to ensure fertility
	Horizontal Limits and Thickness	Measured	Continuous observation	For Documentation
	Certification as complying with NJDEP Unrestricted Use Criteria	NJAC 7:26E- 6.4(b)2iv-vi	Per source	Certification received from approved independant analytical testing laboratory.
Rip-rap	Rip-rap Sizing	ASTM D5519	Per source	15-inch Stone Size $D_{25}=7.5$ " $D_{50}=15$ " $D_{100}=22.5$ " 6-inch Stone Size $D_{25}=3$ " $D_{50}=6$ " $D_{100}=9$ "
	Certification as complying with NJDEP Unrestricted Use Criteria	NJAC 7:26E- 6.4(b)2iv-vi	Per source	Certification received from approved independant analytical testing laboratory.

Table 4 – QC Testing Requirements - Developed Area Cap Morton International Inc.

Ventron/Velsicol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

			·	
Material	Required Test	Test Method	Frequency	Acceptance Criteria
Reinforced Concrete	Concrete Mix Design	Per ACI and ASTM Standards	Per Source/Mix Design	Complies with approved mix design. Maximum water/cement ratio: 0.488
	Reinforcement Size and Spacing	Visual	All	In accordance with the approved rebar shop drawing
	Air Entrainment (%)	ASTM C 231	1/50cy	For Documentation
	Slump Testing (in.)	ASTM C143	1/50cy	For Documentation
	Strength Testing (psi)	ASTM C 172	1/50cy	≥ 3150psi @ 7 days ≥ 4500psi @ 28 days
	Surface Temperature	Thermometer	Daily	For Documentation
	Placement	Visual	Post Construction / Daily	Drainage paths are maintained, no visible ponding
Asphalt Concrete	Composition Testing	NJDOT Standards	Per Source/Mix Design	Complies with NJDOT standards for intended use
	Placement	Visual	Post Construction / Daily	Drainage paths are maintained, no visible ponding
Gravel Subgrade for Pavement	Certification as complying with NJDEP Unrestricted Use Criteria	NJAC 7:26E-6.4(b)2iv-vi	Per source	Certification received from approved independant analytical testing laboratory.
	Grain Size Analyses	ASTM D422	1/1,000 cy or per visual or textural change in material	100 percent passing the 4-in. sieve; 50% - 70% passing the No.4 sieve; 25% - 60% passing the No. 40 sieve; Less than or equal to 30% passing the No.200 sieve.
	Moisture Content	ASTM D2216	1/1,000 cy or per visual or textural change in material	For Documentation
	Modified Proctor Moisture Density	ASTM D1557	1/1,000 cy or per visual or textural change in material	For Documentation
	Horizontal Limits and Thickness	Measured	Continuous observation	For Documentation
	In-place Moisture Content	Visual	Continuous observation	Subgrade and restored area is firm and free of soft/unstable wet areas
Railroad Ballast	Grain Size Analyses	ASTM D422	Per Source	For Documentation
	Placement	Visual	Post Construction / Daily	For Documentation
	Certification as complying with NJDEP Unrestricted Use Criteria	NJAC 7:26E-6.4(b)2iv-vi	Per source	Certification received from approved independant analytical testing laboratory.

Table 5 – QC Testing Requirements - Storm Water Controls

Morton International Inc.

Ventron/Velsicol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

Material	Required Test	Test Method	Frequency	Acceptance Criteria			
Developed Area Cap	Pavement Grades	Visual	After any required mainenance or repair	Pavement grades are consistent with record drawings			
Undeveloped Area Cap	Rip-rap Sizing	ASTM D5519	Per source	15-inch Stone Size D_{26} = 7.5" D_{50} = 15" D_{100} = 22.5" 6-inch Stone Size D_{25} = 3" D_{50} = 6" D_{100} = 9"			
	Certification as complying with NJDEP Unrestricted Use Criteria	NJAC 7:26E-6.4(b)2iv-vi	Per source	Certification received from approved independant analytical testing laboratory.			
			After any required mainenance or repair	Swale grades are consistent with record drawings			

Table 6 – Data Quality Objectives and Analytical Levels Ventron/Veliscol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

Data Collection Activities	Media	Approx. No. Samples ⁽¹⁾	Parameters	DQO Level	Field Method	Analytical Method ⁽³⁾	Objectives / Rationale
			Total Mercury		Low-flow purge and	SW-846 method 7074A	Monitor contaminant flux from Site
Contaminant Flux	Water	16	Arsenic	Level III	sample collection	SW-846 method 6010B	ground water to surface water to
			Benzene			SW-846 method 8260	evaluate the remedy
Wolf Warehouse Indoor Air Monitoring	Air	4 per event	Total Atmospheric Mercury	Level V	Forntier Geosciences Sorbent Total Mercury Method (FGS-009)	USEPA method 1631	Determination of gaseous and particulate mercury concentration in air
CEA	Water	24	VOCs, SVOCs, metals, pesticides, and PCBs ⁽²⁾	Level III	Low-flow purge and sample collection	SW-846	Evaluate effectiveness of the remedial action and improve estimation of the CEA duration.
		source pesticides, and PCBs Level III sample from borrow pit					
Backfill Certification	Soil			Level III			Certify clean fill for use as backfill as needed
		1/1,000 cy	cy VOCs, SVOCs, metals, Level III borrow pit		Grab sample from borrow pit for every 1,000 cy of fill	SW-846	

Notes:

- (1) Number of samples to be determined during OM&M activities.
- (2) A full TCL/TAL analysis will be performed on each sample during the first sampling round. Thereafter only site COC's (mercury, arsenic, and benzene
- (3) The methods are EPA methods unless otherwise indicated. Complete method references are provided in separate tables.
- (4) Site-Related soil and ground water contaminants are defined in the ROD, signed October 30, 2006.

PCBs Polychlorinated biphenyls
PID Photoionization detector
SVOCs Semivolatile organic compounds

VOCs Volatile organic compounds

Table 7 – QC Analytical Sampling Frequency Ventron/Veliscol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

QC Samples	Non-Aqueous (soil)	Aqueous	Air
Field Rinsate Blank	1 per 10 samples or	1 per day	None
	1 per day (whichever is less)		
Trip Blank	None	1 per shipment*	1 per event
Field Duplicates**	1 per 20 samples	1 per 20 samples	1 per event
MS/MSD**	1 per 20 samples	1 per 20 samples	None
Temperature Blank	Each Cooler	Each Cooler	None

Notes:

^{*} Not to exceed 2 consecutive field days
** Samples collected 1 per sample matrix if less than 20 samples are to be collected.

Table 8 – Sample Collection Requirements Ventron/Veliscol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

Matrix	Parameter	Sample Container(s) (1)	Preservative	Holding Time	
Air	Mercury	Sorbent Tube	None	1 year	
	Arsenic (1) 1-liter plast		Nitric acid, pH<2 Cool, 4oC	6 months	
	Volatile organic compounds	Glass with Teflon-lined septum	Cool, 4°C, protect from light, 0.8% Na ₂ S ₂ O ₃ if residual Cl ₂	10 days	
	Semivolatile organic compounds ⁽²⁾	Glass, White polypropylene or black phenolic, baked polyethylene cap	Cool, 4°C	Extraction - 5 days from VTSR Analyses - 40 days from extraction	
GW	Pesticides/PCB	Amber glass, White polypropylene or black phenolic, baked polyethylene cap	Cool, 4°C, protect from light	5 days from VTOS	
	Metals ⁽³⁾	125-mL wide mouth HDPE bottle	Cool, 4°C	180 days from VTOS	
	Benzene	Glass with Teflon-lined septum	1:1 HCL, pH <2, Cool, 4°C until analysis, Ascorbic acid	14 days	
	Mercury	(1) 1-liter plastic bottle	Nitric acid, pH<2 Cool, 4°C	28 days	

Note:

- 1) The sample containers may be combined as needed in cases where the container materials, preservative, and sample handling instructions do not conflict and where a single laboratory is performing the combined analyses
- 2) Semi-volatile organic compounds include bis(2-ethylhexyl)phthalate and chrysene.
- 3) Metals include arsenic, copper, lead, and thallium.

VSTR Verified time of sample receipt VTOS Verified time of sampling

mL Milliliter

Table 9 - Quality Review Parameters Ventron/Veliscol Superfund Site Operable Unit 1 Wood-Ridge and Carlstadt, New Jersey

Matrix	Parameter	Method	Units	MDL ^a	PQL/IDL	Bias (percent) ^b	Precision (RPD) ^b	Completeness
Air	Mercury	FGS-009	ng/m³	0.5	20	75-125	25	90
	Benzene	SW-846 method 8260	μg/L	0.24	1.0	50-150	30	90
Water	Arsenic	SW-846 method 6010B	μg/L	-	5	75-125	35	90
	Total Mercury	SW-846 method 7074A	μg/L	-	0.1	75-125	20	90

Notes:

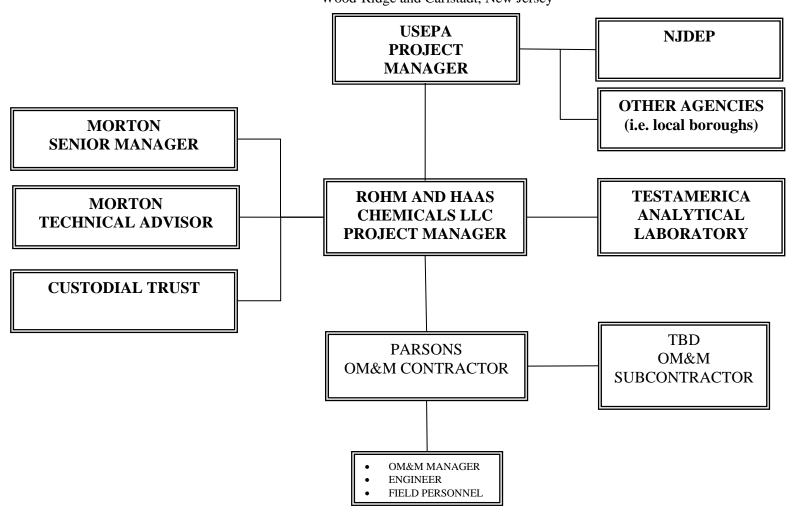
Compounds listed are only Site-related constituents that are part of the long term monitoring program at the Site.

- a Metals are reported to the IDL.
- b The values listed for bias and precision are the ranges listed per the referenced method or what can routinely be achieved by and analytical laboratory.

MDL Method Detection Limit
PQL Practical Quantitation Limit
IDL Instrument Detection Limit
RPD Relative Percent Difference

FIGURE 1 – PROJECT MANAGEMENT CHART

Ventron/Velsicol Superfund Site Operable Unit 1 (OU-1) Wood-Ridge and Carlstadt, New Jersey



LFPS	FIELD I	INSTRUMI	ENT CALI	BRATION F	FORM			
Client:	Morton Internat	tional Inc.	Date:					
Project Name:		ol OU-1 Superfund	Site	Inspector:				
Project Location:		d Carlstadt, New Je			_			
Project Number:		,			_			
			1					
Meto	ers (make / mod	lel)		Probe				
DO								
рН								
Spec Cond.								
ORP								
Turbidity								
Dissolved	Oxvgen	Tu	rbidity	ORP				
	<u> </u>	Standard	Reading					
Water Temp		D.I. Water		Standard Temp.				
Baro. Pres.				Standard Conc.				
Saturation				Initial Reading				
Init. Mtr. Rd.				Meter reset to				
Mtr. Reset to								
O2 Satur. %								
		Specific	Conductance	•				
	C			T	I # 1E1 D			
	Conc.	Intitial Reading	Reset to	Temperature	Lot # and Expl. Date			
Standard #1								
Standard #2								
Standard #3								
Standard #4								
			pН					
Buffer	Temperature	Initial Reading	pH Units	Meter reset to	Lot # and Expl. Date			
4					•			
7								
10								
	•							

				SAN	IPLING I	RECORI	O - GRO	UNDWATE	3				
CLIENT: PROJECT NAME: PROJECT LCOATION: PROJECT NUMBER:								DATE: INSPECTOR: CREW: WEATHER:					
PROJECT (STUDY_ID): _ AOC # (AREA):								1	WELL # :	Y:			
SCREENED INTERVAL (TOC): MONITORING DATE:								NAME:			LING PERSONNEL		
INSTRUMENT:								NAME:				 	
DETECTOR:												 	
BOREHOLE DIAMETER FACTORS DIAMETER (INCHES): GALLONS/FOOT:	1 0.041	1.5 0.092	2 0.163	3 0.367	4 0.654	5 1.02	6 1.47	7 2	8 2.61	9 3.3	10 5.87		
WELL HEAD VOC CONCENTRATION	N (ppm):					PUMP INTAKE	E DEPTH (ft be	elow TOC):					
WELL DEPTH (TOC):						DEPTH TO WA	ATER BEFORI	E PUMP INSTALLATI	ON (ft below T	OC):			
FEET OF WATER IN WELL:													
				PU	IRGING AND	SAMPLING	WITH A LO	W-FLOW PUMP					
													DEDTH TO

						PU	RGING AND	SAMPLING	WITH A LOV	V-FLOW PUMP						
	RGING	SAMPLING	р (рН (oH units)	SPECIFIC CONDUCTIVITY (mS/cm)		REDOX POTENTIAL (mV)		DISSOLVED OXYGEN (mg/L)		TURBIDITY (NTU)		TEMPERATURE (degrees C)		PUMPING RATE	DEPTH TO WATER (ft below
TIME	PUF	SAI	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	READING	CHANGE*	(ml/min)	TOC)
	-															-
	-															-

COMMENTS:

Indicator readings have stabilized when 3 consecutive readings are within: +/- 0.1 for pH; =+/- 3% for Specific Conductivity and Temperature; +/- 10 mv for Redox Potential; and +/- 10% for Dissolved Oxygen and Turbidity

	SAMPLING RECORD - GROUNDWATER													
					SAMPLI	NG INFORMATION	ON							
SAMPLING DEVICE:										WELL#:				
SAMPLE NUMBER:	1	1	1		•									
SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY	COMMENTS									
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QA/QC DUPLICATE SAMPLE Duplicate Sample Name:	COLLECTED: \	YES or NO												
QA\QC RINSATE SAMPLE N	AME:													
MATRIX SPIKE SAMPLE CO	LLECTED: YES	or NO												
INVESTIGATION DERIVED V	VASTE (IDW):													
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Date:														
Volume Tr	ansfered to Drum:													
	Drum Number:													

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	C	LIENT:						BORI	NG NO.:				
PI	ROJECT	NAME :				STAR	T DATE:						
								FINIS	H DATE:				
					SUMMAR	Y		WEATHER					
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METHOD	DIA.(ft)	INTER	VAL (ft)	SIZE	TYPE	TYPE	WT/FALL						
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INSTRU	MENT	DETE	ECTOR	RANGE		BACKGROU			BRATION	WEATHER			
TYI	TYPE TYPE/ENERGY				READING	TIME	DATE	TIME	DATE	(TEMP., WIND, ETC.)			
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		ECT N						DATE:		
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			-					DRILLER:		
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(FT)	INCHES	(FEET)	(FEET)					with amount modifiers and grain-size, density, stratification, wetness, etc.)		
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	PROJECT LOCATION: PROJECT NUMBER:							INSPECTOR: CREW:								
	PROJEC.	I NUIV.	IDEK.					WEATHER:								
								DRILLER:								
D E	SA	MPLING	r		SAN	/IPLE		SAMPLE								
P	BLOWS	PENE-	RECOV-	DEPTH			RAD	DESCRIPTION	USCS	STRATUM						
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PID/F	TD & 4-0	GAS INST	RUMENT	CALIBRA	FION LOG
Client	•			Date:	
Project Name	:			Inspector:	
Project Location:	:			Crew:	
Project Number	:			- Weather:	
For	PID, FID, and	4-Gas Meters		-	
Date	Time	Instrument Type	Calibration Gas and Concentration	Calibrated (Yes or No)	Notes

SAMPLING RECORD - SOIL Client: Date: Inspectors													
Client:													
Project Name:					•	Inspector:							
Project Location:						Crew:							
Project Number:					•	Weather:							
Comments:													
	_								_				
Location ID	Sample Number	Sample	Depth	Time	Grab	Sample Description	USCS Class.	VOC Screen	QC Split				
	Number				or Comp.		Class.	Screen	(yes or no)				
		Тор	Bottom		comp.				110)				
									<u> </u>				
									 				

TestAmerica

777 New Durham Road Edison, New Jersey 08817

CHAIN OF CUSTODY / ANALYSIS REQUEST

P.O. # State (Location of site): NJ: NY: Other: Regulatory Program: Analysis Turnaround Time Sancient Sancient Sancient Project No: Job No: Sample Matrix No. of Sample Matrix No. of Numbers No. of Numbers No. of Numbers Number	Phone: (908) 549-3900 Fax: (908) 549-36	679																PAGE OF
Regulatory Program: Analysis Turnaround Time Siminfaired Analysis Turnaround Time Siminfaired Analysis Requested Anal	Name (for report and invoice)		Sampl	ers Name (Printed)			Site/Project Identification									
Regulatory Program: Analysis Turnaround Time Siminfaired Analysis Turnaround Time Siminfaired Analysis Requested Anal	Company		P.O. #						State (Location of site): NJ: NY: Other:									
State Zip Rush Cleages Authorized For: 2 2 2 2 2 2 2 2 2											· · · · · · · · · · · · · · · · · · ·							
Phone Fax	Address								ANALYSIS REQUESTED (ENTER "X" BELOW									
Sample Identification Date Time Matrix No. of Cont. Sample Numbers Num	•	Zip		I — — /														Job No:
Preservation Used: 1 = ICE, 2 = HCl, 3 = H ₂ SO ₄ , 4 = HNO ₃ , 5 = NaOH Soil:	Phone Fax			=													/ -	
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Laboratory Certifications: New Jersey (12028), New York (11452), Pennsylvania (68-522), Connecticut (PH-0200), Rhode Island (132)

APPENDIX D – EQUIPMENT MANUALS

- 1. Asphalt Cap
- 2. Chain Link Fence
- 3. Reinforced Concrete Cap
- 4. Undeveloped Area Cap
- 5. Vertical Barrier Wall
- 6. Developed Area Ground Water Collection System
- 7. West Ditch Tide Gate
- 8. Wolf Warehouse Railroad Siding Material

APPENDIX D.1 – ASPHALT CAP

OM&M Plan for Ventron Velsicol Superfund Site Operable Unit 1

Asphalt Material Index

I-2 Asphalt Mix Design	2
I-5 Asphalt Mix Design	3
Asphalt Tack Coating Product Information	4
Tisphant Tack Coating Trodact information	

BITUMINOUS CONCRETE MIX DESIGN MASTER COPY

APPRYEAR: 2007

MIXTYPE: I-2 20%RAP

BITSUPPLY: TILCON NEW JERSEY INC.

MIX S/N: R1D0631-20R

PLANT TYPE: DRUM

LOCATION: TOTOWA, NJ

JOB MIX FORMULA

AMMENDED - DATE AND SIEVES

	7	JOB MIX FORMULA
Ì(iOTAl	. PERCENT PASSING EACH SIEVE)

{IUIAL PEI	CENT PASSING I	EACH SIEVE)	AMMENDED - DATE AND SIEVES							
SIEVE SIZE ENG./METRIC			LOT#	DATE:	LOT# DATE:					
	FORMULA	AVG. OF 5	FORMULA	AVG. OF 5	FORMULA	AVG. OF 5				
2" / 50mm	100	100								
1 1/2" / 37.5mm	100	90-100								
1" / 25mm	100	80-100				 				
3/4" / 19mm		*****								
1/2" / 12.5mm	77	50-85								
3/8" / 9.5mm		4								
#4 / 4.75mm	52	25-60								
#8 / 2.36mm	37.0	32.5-41.5								
#16 / 1.18mm	· •-									
#30 / 600 μm										
#50/300µm	14	8-30				_				
#1 150 μm		,								
#200 / 75 μm	5.4	4.0-6.8								
AC CONTENT	4.40	3.95-4.85	-							
		· · · · · · · · · · · · · · · · · · ·	- 10(4:4:5)	DECICN MAY CD	ECIFIC CDAVITY	2 573				

* AC PROPORTIONS:

AC(virgin) + AC(rap) = AC(total)3.40 + 1.00 = 4.40 DESIGN MAX SPECIFIC GRAVITY ORIGINAL DATE OF APPROVAL

2.573 5/10/1993

PERCENT ASPHALT CEMENT BASED ON THE TOTAL WEIGHT OF MIXTURE BIN PULLS

	%	PRODUCER AND LOCATION	CRITERIA -	MIX DESIGN		VERIFICATION	
RAP	20.0	RECLAIMED ASPHALT PAVEMENT	15 m 27 m 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ENG.	METRIC	ENG.	METRIC
BIN NO. 5:	20.0	RECLAIMED ASPRACT FAVEMENT	STABILITY	3169	14.1	3417	15.20
BIN NO. 4:	33.7	MT. HOPE ROCK PRODUCTS, WHARTON, NJ	FLOW VALUE	1	12.2		2.5
BIN NO. 3:	12.3	MT. HOPE ROCK PRODUCTS, WHARTON, NJ	AIR VOIDS (%)	4.0		3.7	
BIN NO. 2:	16.2	MT. HOPE ROCK PRODUCTS, WHARTON, NJ	VMA (%)	14.5			
BIN NO. 1:	13.9	MT. HOPE ROCK PRODUCTS, WHARTON, NJ					
TILLER:	0.5	RECLAIMED BAGHOUSE FINES	UNI		kg/m	² /mm	
AC CONT.	3.40	EXXON-CHEVRON-CIBRO PG64-22			115.7		2.471

NOTE: RICE METHOD UTILIZED FOR DETERMINING VOIDS

MIX DESIGNED BY: C. GAUSTEN

COLD FEED PROPORTIONS: SAND=14.5%, #10=17.0%, #9=13.0%, #57=35.0%, , FILLER=0.5%, RAP=20.0%

NOTES: ORIG. R1B0154 MT. HOPE

Bureau of Materials/Asphalt Lab

Regional Materials Staff (5)

Plant Book

Signed:

Principal Materials Engineer

BITUMINOUS CONCRETE MIX DESIGN MASTER COPY

APPRYEAR: 2007

MIX S/N: R1B0630-10R

MIXTYPE: 1-5 10%RAP

PLANT TYPE: BATCH

BITSUPPLY: TILCON NEW JERSEY INC.

LOCATION: TOTOWA, NJ

JOB MIX FORMULA

(TOTAL PERCENT PASSING EACH SIEVE)

JOB MIX FORMULA AMMENDED - DATE AND SIEVES

									
SIEVE SIZE			LOT# I	DATE:	LOT # DATE:				
ENG./METRIC	FORMULA	AVG. OF 5	FORMULA	AVG. OF 5	FORMULA	AVG. OF 5			
2" / 50mm									
1 1/2" / 37.5mm									
1" / 25mm									
3/4" / 19mm									
1/2" / 12.5mm	100	100				· · · · · ·			
3/8" / 9.5mm	97	80-100							
#4 / 4.75mm	67	55-75							
#8 / 2.36mm	46.5	42.5-50.5							
#16 / 1.18mm	33	20-45							
#30 / 600 µm	23	15-35							
#50 / 300 µm	16	10-30							
# 150 µm					;				
#200 / 75 µm	5.5	4.1-6.9							
*AC CONTENT	5.40	5.25-5.55							

* AC PROPORTIONS:

AC(virgin) + AC(rap) = AC(total)4.90 + 0.505.40

DESIGN MAX SPECIFIC GRAVITY ORIGINAL DATE OF APPROVAL

2.546 6/22/1993

PERCENT ASPHALT CEMENT BASED ON THE TOTAL WEIGHT OF MIXTURE BIN PULLS

	%	PRODUCER AND LOCATION	CRITERIA -	MIX DESIGN		VERIFICATION	
RAP	10.0	RECLAIMED ASPHALT PAVEMENT		ENG.	METRIC	ENG.	METRIC
BIN NO. 5:	10.0	RECORDED AGENCE TAY DIVIDITY	STABILITY	3485	15.50	3575	15.8
BIN NO. 4:			FLOW VALUE	10.0		1	1.5
BIN NO. 3:	18.9	MT. HOPE ROCK PRODUCTS, WHARTON, NJ	AIR VOIDS (%)	4	4.1		3.9
BIN NO. 2: BIN NO. 1:	26.5 38.7	MT. HOPE ROCK PRODUCTS, WHARTON, NJ MT. HOPE ROCK PRODUCTS, WHARTON, NJ	VMA (%)	16.9			
FILLER:	1.0	RECLAIMED BAGHOUSE FINES	UNIT WT/SY/IN		kg/m²/mm		
AC CONT.	4.90	EXXON-CHEVRON-CIBRO PG64-22	WEIGHT	11			44 I

NOTE: RICE METHOD UTILIZED FOR DETERMINING VOIDS

MIX DESIGNED BY: C. GAUSTEN

COLD FEED PROPORTIONS: RAP=10.0%, #8=40.0%, #9=5.0%, #10=27.0%, Sand=17.0%, Filler=1.0%,

NOTES: ORIG. R1C0057 MT. HOPE

Bureau of Materials/Asphalt Lab

Producer

Regional Materials Staff (5)

Plant Book

Signed:

Principal Materials Engineer

HATERIAL SAFETY DATA SHEET MSOS MUMBER: 25 PART NUMBER: } VCT NAME: Asphalt Cut-Back, RC-70 UMBER: 8052-42-4 CHEMICAL NAME: Asphalt Cut-Back, RC-70 SECTION 1 MANUFACTURER: Peckham Industries Inc. HMIS RATINGS: HEALTH: 1 ADDRESS: 20 Haarlem Ave. FIRE: 3 White Plains, NY 10603 REACTIVITY: 0 PERSONAL PROTECTION: 8 EMERGENCY TELEPHONE NUMBER: (800)424-9300 INFORMATION TELEPHONE NUMBER: (914)949-2000 DATE PREPARED: 01/03/96 SECTION II - HAZAROOUS INGREDIENTS/IDENTITY INFORMATION

•			SUB-	SARA			OTHER LIMITS
CAS NUMBER HAZARDOUS COMPONENT .	HTP	IARC	PART/Z	313	OSHA PEL	ACGIH TLY	RECOMMENDED PERCENT
8052-42-4 Asphalt 8030-30-6 Waphtha, petroleum						5 mg/m3	SS to 75 25 to 45

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

BOILING POINT	> 120 F	SPECIFIC GRAVITY (H2O = 1)	0.99000
VAPOR PRESSURE (mm Hg.)	275 a 20 c	HELTING POINT	HA
VAPOR DENSITY (AIR = 1)	>5	EVAPORATION RATE (Butyl Acetate = 1)	3

SOUPPULLITY IN WATER: Regligible

AP. ..KANCE AND COOR: Black color, semi-solid when cold, viscous fluid when hot, asphalt/petroleum odor

CINER INFORMATION: Product is normally stored and transported at 125 to 200 (deg. F).

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 80 minimum (deg. F) FLANKABLE LIKITS: LEL: 0.9% UEL: 7%

EXTINGUISHING MEDIA: Dry chemical and CO2. Foam and water fog are effective but may cause frothing.

SPECIAL FIRE FIGHTING PROCEDURES: On not enter any enclosed or confined fire space without proper protection equipment. This may include SCBA. Cool tanks and containers exposed to fire with water, improper use of water and extinguishing media containing water may cause frothing which can spread the fire over a larger area.

UMUSUAL FIRE FIGHTING PROCEDURES: The flash point displayed above refers to only the petroleum components of this product, when heated above its flash point or when held in storage at elevated temperatures, this material can release flammable vapors which can burn in the open or be explosive in confined spaces if exposed to an ignition source. Studies have shown that relatively low flash point substances, such as hydrogen sulfide and low-boiling hydrocarbons, may accumulate in the vapor space of hot asphalt tanks and bulk transport compartments. As a precaution, keep ignition sources away from vents and openings.

teep product away from heat, Sparks, pilot lights, static electricity, and open flames. "Empty" containers retain residue (liquid and/or vapor) and can be dangerous. 00 MOT expose these containers to sources of ignition as they may explode.

SECTION V - REACTIVITY DATA

STABILITY: Stable. DO NOT heat this meterial above 225 (deg. F). Avoid contact of hot asphalt with water or light hydrocarbons which may create a violent eruption.

INCOMPATIBILITY (MATERIALS TO AVOID): Avoid contact with strong exidents such as liquid chlorine, concentrated exygen, sedium hypochlorite or calcium hypochlorite. Not product in contact with water can cause forming or sudden evolution of steam which could cause pressure build-up and possibly rupture a tank or a vessel.

S DECOMPOSITION OR BYPRODUCTS: Combustion may produce carbon monoxide, exides of sulfur, asphyxiants. HAZ

MAZARDOUS POLYMERIZATION: WILL not occur.

TOWNWER: 25 AKOUCT HAME: ASPHALL CUL-Back, RC-70

SECTION VI - HEALTH HAZARD DATA

ROUTE(S) OF EXTRY: Inhalation, Skin, Eyes, Ingestion

HAZAROS (ACUTE AND CHRONIC): Heated product may cause thermal burns. Avoid contact with skin and eyes. Product normally inhipped at 125 to 200 deg. f. Contact with this product at warm and ambient temperatures amy cause eye/skin irritation but will not campge tissue. Heated product may liberate toxic and flammable sulfide gas - harmful if inhaled in confined spaces. Product has a low order of acute oral and dermal toxicity, but minute amounts aspirated into the lungs during ingestion or vomiting may cause sulmonary injury and possibly death.

SIGNS AND SYMPTOMS OF EXPOSURE: In confined spaces funcs may cause irritation to the respiratory tract, headaches, dizziness or nauses, unconsciousness and possibly death.

MEDICAL COMDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Skin contact may aggravate existing dermetitie.

EMERGENCY AND FIRST AID PROCEDURES:

(Skin Contact)

cool burns with ice water, then seek medical attention.

(Inhalation)

move to fresh air. If condition persists seek medical attention.

(Eve Contact)

tush with water for 15 minutes; consult a physician.

ingestion)

/ ingested, DO NOT induce vomiting; call a physician immediately.

THER HEALTH WARNINGS: Health studies have shown that many petroloum hydrocarbons and synthetic lubricants pose potential human calth risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized.

ensured with pre-existing central nervous system disease, skin disorders, or chronic respiratory diseases should avoid exposure to his product.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

TEP BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Shut off and eliminate all ignition sources. Minimize breathing vapors of s. contact. Ventilate confined spaces. Contain spilled material, allow to cool. Keep product out of sewers and watercourses by iting with sand or earth. Product can then be disposed of as hardened common waste, recycled in Cold Mix Asphalt, or used as base atterial.

ISTE DISPOSAL METHOD: Follow all applicable regulations when landfilling the material.

ECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Eliminate all sources of ignition. Avoid direct contact with skin. Avoid fumes in xifined spaces.

HER PRECAUTIONS: Properly dispose of all saturated clothes, gloves and shoes. Observe good personal hygiene.

SECTION VIII - CONTROL MEASURES

HILLATION REQUIREMENTS: Use local exhaust to capture tymes when handling hat product in confined spaces.

RSOMAL PROTECTIVE EQUIPMENT: Use of gloves, boots, and long sleeved shirts and pants is required to avoid contact with skin. Use tash goggles when eye contact may occur. Minimize breathing vapor, mists or fumes. Use supplied-air respiratory protection in officed or enclosed spaces.

SECTION IX - ADDITIONAL INFORMATION

DIFIGMAL MARGIFACTURER MARRINGS: Marning - Hydrogen sulfide (HZS) may collect in the Mapor space of containers of hot asphalt, see preaching the Mapors.

he and transport this material at a temperature as far below its flash point as is possible, and in accordance with all coreale laws. Minimize water accumulation in tanks and contamination with light hydrogarbons. Keep all sources of ignition away in opening natches and dome covers of tanks and transporters.

ER PRECAUTIONS AND COMMENTS:

intermation and recommendations contained herein are, to the best of Peckham Industries Inc.'s (PII) knowledge and beleif, unate and reliable as of the date issued. PII does not warrant or guarantee their accuracy or reliablity, and PII shall not be a liable for any loss or damage arising out of the use thereof.

on and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to see that they are suitable and complete for its particular use.

APPENDIX D.2 – CHAIN LINK FENCE

Chain Link Fence Material Index

Concrete Cap Construction Note	2
Quik-Rok Cement/Grout Product Information	3
Chain-link Fence Fabric Product Information	7
Chain-link Fence Shop Drawing	8

TRAN	ISMITTAL OF SHOP DRAWINGS, EQUIPMENT MANUFACTURER'S CERTIFICATES		MPLES, OR	DATE: Sep	tember 22, 20	010	TRANSMIT	TTAL NO. 31-01	
	SECTION I - REQUEST FOR A	PPROVAL OF THE FOLL	OWING ITEMS	(This section	will be initiated	by the co	ntractor)		
TO: I	PARSONS	FROM: Sevenson Envi			Job No. 102		CHECK OF		
1	150 Federal Street 4th Floor	2749 Lockport	Road					NEW TRANSM	
	Boston, MA 02110	Niagara Falls, l	NY 14305				☐ THIS IS A TRANSM	RESUBMITTA	LOF
Attn:	Chris Greene				·				
SPECI	FICATION SEC. NO. (Cover only one section with	PROJECT TITLE AND	LOCATION:			C	HECK ONE:	THIS TRANSM	ITTAL IS
	ansmittal	Ventron/Velsicol Supe	rfund Site OU-	1					
Section	a 2831 Chain Link Fence	Developed area					FOR	□ FIO X A	PPROVAL
		Wood-Ridge and Carls							
ITEM	DESCRIPTION OF ITEM SUBMITTED	MFG OR CONTR. CAT.	NO.		REFERENCE		NTRACTOR	VARIATION	FOR CE USE
NO.	(Type size, model number/etc.)	CURVE			JMENT DRAWING	USE CODE		(See instruction	CODE
		DRAWING OR BROCHURE NO.	COPIES	SPEC. PARA, NO.	SHEET NO.			No. 6)	CODE
a.	b.	c.	d.	е.	f.		g.	h.	j.

1	Chain Link fence materials	C \$ 5	1					11111111111111111	
	-								
								3	
*Note t	hat in the area of the concrete cap the fence posts will be	e drilled and grouted in plac	e with 6"	correct and	in strict confor is except as ot	mance wit	th the contrac	reviewed in de t drawings and	
					NAME A	ND SIGNA	TURE OF CO	NTRACTOR	
		SECTION II - AP	PROVAL AC	TION	······				
ENCLO	SURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNA			ORITY	DATE			
	· · ·								

Sevenson Environmental Services, Inc.



CEMENT/GROUT

www.ameristarfence.com

FAX: 1-877-926-3747

ITEM NUMBER	PRICE EACH	PACKAGE	PALLET QUANTITY	WEIGHT
1002	36.70 **	Plastic Pail	36	52.5 Lb.

DESCRIPTION

QUIK-ROK® is a chemially engineered hydraulic cement which when mixed with water forms a pourable mix whose self-leveling characteristics make it an ideal grouting material. Controlled expansion enables QUIK-ROK® to develop "lock-in" adhesion which can withstand loads in excess of 10,000 psi. It is designed to set within 15 minutes, under normal conditions.

NOTE: Instructions for Use on Pages 21-3 and 21-4. Read the "Caution" statements prior to use.

** Price is net price F.O.B. Tulsa. Discount quantities available for half truckload and full truckload orders. Six (6) pallet orders are minimum for paid freight.



Fast Setting Anchoring Cement Grout

USES

AS A GROUT – In a "Neat" mix of QUIK-ROK® and water only

- · Anchoring galvanized fence post
- Grouting parking meters and sign posts
- · Precision grouting and leveling of heavy machinery indoors
- · Grouting of anchor bolts, dowels, etc. indoors only

WARNING

Quick-Rok® is not to be used for anchoring balcony railings or other similar life safety structures.

AS AN ADDITIVE – In a concrete mix of Portland Cement, aggregate, and sand.

NOTE: Follow directions on Page 21-4

- Increasing set-time and compressive strength of Portland Cement
- Setting of fence posts

ADVANTAGES

- 1. Pre-mixed
- 5. Exceptional one hour compressive strength
- 2. Fast Set
- 6. Non-shrinking
- 3. Pourable
- 7. Non-metallic
- 4. Self-Leveling
- 8. Inorganic

www.ameristarfence.com 1-888-333-3422

FAX: 1-877-926-3747

CEMENT/GROUT

PACKAGING

QUIK-ROK® is supplied in 52.5 lb. pails.

PHYSICAL PROPERTIES

Color:	Gray
Set Time:	7-9 minutes
Expansion:	0.2% maximum

COMPRESSIVE STRENGTH

One hour wet:	6,000	psi
One day dry:	9,000	psi
Ultimate:	14,000	psi

INSTRUCTIONS FOR USE:

AS A NEAT MIX FOR ANCHORING:

Core-drill a hole using the applicable dimensions from Table 1 below

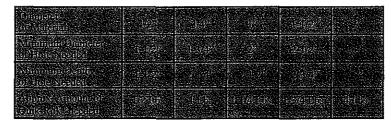


Table 1 recommended dimensions for use as "Neat Mix" Anchoring Grout

CAUTION:

Since the hole will serve as the form for the QUIK-ROK® pour, it is imperative that all loose dirt, rocks and other foreign matter be removed. Because QUIK-ROK® is an expansive product, the area surrounding the hole must be structurally sound, either by having a sufficient mass of well-cured concrete or an equally supportive amount of steel reinforcing. NEVER use QUIK-ROK® in holes cut into narrow or thin-capped walls, curbs or masonry items such as filled block or brick. Always ensure that no edge of adjoining concrete is less than 2 hole diameters from the outside perimeter of the hole.

Water used in mixing QUIK-ROK® must be as pure as possible; if it is drinkable, it is probably suitable. Soluble salts such as sodium chloride, sodium sulfate and magnesium sulfate must not be present in large amounts as they could react adversely with the QUIK-ROK® material. Mix up to 1 part of pure water to 3-1/2 parts of powder by volume, using as little water as necessary for pourability. Accurate measuring of the ingredients in a properly mixed first batch will ensure consistency on subsequent batches, provided the same water-to-QUIK-ROK® ratio is maintained. Variations in the ratio will affect absorption and strength over time. QUIK-ROK® will set in 7-9 minutes when both the QUIK-ROK® and water are at 70°. To maintain set time consistency use warm water in cold weather and cold water in warm weather. Pouring in temperatures below freezing is not recommended.

CEMENT/GROUT

www.ameristarfence.com 1-888-333-3422

FAX: 1-877-926-3747

CAUTION:

Pourability time is less than 10 minutes; therefore, batch size should permit pouring to be completed within 5 minutes after mixing. Mixing too late (i.e., after setting action is started will decrease strength. AVOID watery mix: ultimate strength and durability, depends on minimum amounts of water. QUIK-ROK® is specifically designed to flow with minimum amounts of water. **DO NOT ADD ADDITIONAL AMOUNTS OF WATER AS MIX BEGINS TO SET!**

Mix for 2-5 minutes to obtain a "creaming" of the QUIK-ROK® slurry. Mixing must be vigorous; <u>mechanical mixing is recommended</u>, particularly for batches over 5 pounds. Resulting physical properties are in direct relation to energy input during mixing.

Pouring should be accomplished in one continuous action so that the entire mix cures uniformly without layering.

CAUTION:

For exterior applications, QUIK-ROK® must be shaped (crowned) to allow for water "run-off". Do not allow sleeve to act as water reservoir. Trowel a mound like head to insure water drain-off. Constant exposure to large amounts of water may cause deterioration. As an extra precaution for exterior surfaces, application of an epoxy sealer to the exposed surface is recommended.

WARNING

Quick-Rok® is not to be used for anchoring balcony railings or other similar life safety structures.

The presence of heavy salt-spray or road salt concentration coupled with continuous moisture build-up could accelerate this deterioration and amplify any harmful corrosive effects on the material being anchored. The use of QUIK-ROK® to anchor aluminum is not recommended in such hazardous applications.

In locations subject to freezing, where hollow posts are grouted into core-drilled holes, a ¼" diameter "weep" hole should be drilled approximately 1/8" to ¼" above elevation. (See Figure 1) This allows for drainage of built-up moisture from condensation, ground water seepage, leakage through post caps or attachment holes, etc. The drilled hole must be wiped clean and dry and sprayed with zinc rich primer and color finish. QUIK-ROK® grout must fill inside the post cavity to ground elevation.

Figure 1

1/4" up x 1/4"
hole in post

Fill to elevation
and crown at post

Ameristar shall, in no case, be responsible for failures in the post or in surrounding grout or masonry when an appropriate drainage space (weep hole) was not provided for during installation or when the internal post cavity is not filled to ground elevation.

CEMENT/GROUT

www.ameristarfence.com 1-888-333-3422

FAX: 1-877-926-3747

AS AN ADDITIVE:

To accelerate the set of a standard 1:2:3 concrete mix, substitute approximately 1.5 to 3 lbs. of QUIK-ROK® for every 10 lbs. of cement in the mix. Stir thoroughly adding as little water as is necessary for flow.

When using the admixture to set columns or posts, the DIAMETER OF THE HOLE SHOULD BE AT LEAST 3 TIMES DIAMETER OF POST, in most cases.

Because the application situation, as well as mixing ingredients and techniques used, can cause extensive variation in physical properties achieved, AMERISTAR® makes no guarantee of results where conditions or procedures are beyond our control. Under no circumstances will Ameristar Fence Products, Inc. be liable for damages in excess of the purchase price of this product. Any use of Quik-Rok® material pursuant hereto shall be considered to have been based on transactions deemed initiated in Tulsa, Oklahoma. Any and all disputes arising directly or indirectly from such transactions shall be resolved in the courts of the County of Tulsa, State of Oklahoma, to the exclusion of any other court, and any resulting judgment may be enforced by any court having jurisdiction of such an action. All transactions shall be governed by and construed in accordance with the laws of the State of Oklahoma.

By use of this product, customer agrees to indemnify Ameristar® Fence Products for any costs, including attorney's fees, incurred by Ameristar® as a result, in whole or in part, of any violation by Customer of any Federal, State or Local statute or regulation, or of any nationally accepted standard. It shall be Customer's sole responsibility to comply with all applicable laws and regulations regarding the handling, use, transportation, or disposal of products upon taking possession of same.

FOR ANY UNUSUAL USAGE - check with manufacturer's technical staff: (Toll Free) 888/333-3422 Ameristar® Fence Products, Inc., P.O. Box 581000, Tulsa, OK.



November 8, 2010

Antonino Spinella C&S Fencing. 75-77 Midland Avenue Elmwood Park, New Jersey 07407

RE: SO#7897559 Chain Link

To Whom It May Concern:

The materials listed below will meet the following specifications:

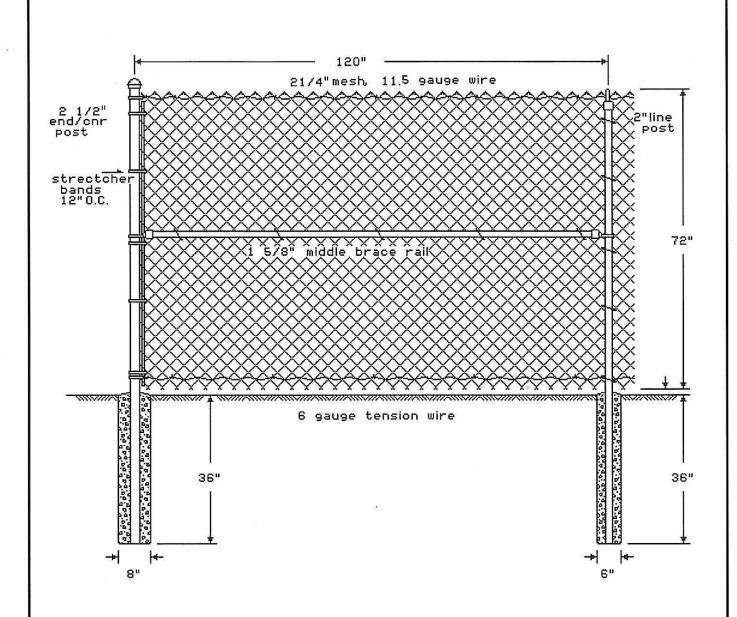
• Chainlink Fabric 2 ¼" x 11ga. Galv Chain Link 1

ASTM A392 CLASS

If there are any further questions please call. 1-888-840-8345

Sincerely,

Joe Schnepp Master-Halco Inc. 225 Lincoln Highway Fairless Hills, Pa. 19030 Distribution Center Manager





C&S Fencing, Inc.

C & S Fence Co., Inc. 75-77 Midland Ave Elmwood Park, N.J. 07407 201-797-5440 Fax: 201-797-8965

PAGE:

1 of 1

Ventron/Velsicol Superfund Site ou-1, Wood-Ridge DRAWN BY: AS Sevenson Environmental Services, Niagara Falls, NY REVISED: AS

DRAWN BY: AS 09/21/10 SCALE:
REVISED: AS 11/01/10 FILE: II

APPENDIX D.3 – REINFORCED CONCRETE CAP

Reinforced Concrete Cap Material Index

Concrete Mix Design	2
Retarding Admixture Product Information	6
Water Reducing Admixture Product Information	8
Air Entraining Admixture Product Information	10
Reinforcement Layout Shop Drawing	12
Expansion Joint Product Information	13
Joint Capping Product Information	17
Tremco Joint Sealant Product Information	17
Baracade Concrete Sealant Product Information	20

Eastern Concrete Materials Inc.

3787

475 Market St. Elmwood Park, NJ 07407 201-797-7979

08/06/10

CONCRETE MIX PROPORTIONS

CONTRACTOR: FORSA CONSTRUCTION

PROJECT: VENTRON/VELSICOL SUPERFUND SITE/WOOD-RIDGE

MIX DATA: EF TECHNOLOGY

CEMENT
FLY ASH
FINE AGGREGATE
COARSE AGGREGATE
AIR ENTRAINING AGENT
ADMIXTURES

WATER REDUCER
PLANT PLAST

LAFARGE, ASTM C-150 TYPE I/II

STI F ASH ASTM C-618
CLAYTON SAND, ASTM C-33
TILCON #57, ASTM C-33
MBVR, MASTERBUILDERS

GLENUIM 7500, MASTERBUILDERS GLENUIM 7500, MASTERBUILDERS

WEIGHTS PER CUBIC YARD

	¥ 4500 PSI REG	4500 PSI PUMP SP
	16111587	46311589
(LBS)	518	535
(LBS)	92	95
(LBS)	1275	1362
(LBS)	1760	1660
(GAL)	31.0	31.5
(OZ)	10.0	10.0
(OZ)	6.1	0.0
(OZ)	0.0	25.2
(OZ)	0.0	0.0
(")	1"-3"	5"-8"
(%)	5+/-1.5	5+/-1.5
(LB/LB)	0,42	0.42
(PCF)	144.6	145,0
	(LBS) (LBS) (LBS) (GAL) (OZ) (OZ) (OZ) (OZ) (OZ) (UZ) (UZ) (UZ)	(LBS) 518 (LBS) 92 (LBS) 1275 (LBS) 1760 (GAL) 31.0 (OZ) 10.0 (OZ) 6.1 (OZ) 6.1 (OZ) 0.0 (OZ) 0.0 (OZ) 5+/-1.5 (LB/LB) 0.42

These mixes are designed to achieve the design strength if sampled and tested in accordance with all ACI and ASTM testing procedures by a certified technician. The concrete proportions have been selected in accordance with ACI 211 and established on the basis of laboratory trial mixtures following the guidelines of ASTM C192 and ACI 318.

3787

MATERIAL ANALYSIS

	% PASSING		
SIEVE SIZE	FINE AGG	COARSE AGG	
1 1/2"			
11"		100.0	
3/4"		94.8	
1/2"		48.6	
]3/8"	100.0	31.2	
# 4	97.2	4.8	
#8 —	88.9	2.5	
# 16	73.6	- 1	
# 30	50,1		
# 50	16.0		
#100	2.5		
#200	0.8		
FINENESS MODULUS	2.72		
SPECIFIC GRAVITY	2.65	2,70	

TEST RESULTS

COMPRESSIVE STRENGTH

AGE	-¥ 4500 PSI REG	4500 PSI PUMP SP
	3340	3410
7	3290	3470
28	5490	5550
	5380	5450
	5420	5590
	Marrantes	
AVG	5430	5530

Eastern Concrete Materials Inc.

3787

475 Market St. Elmwood Park, NJ 07407 201-797-7979

08/06/10

CONCRETE MIX PROPORTIONS

CONTRACTOR: FORSA CONSTRUCTION

PROJECT: VENTRON/VELSICOL SUPERFUND SITE/WOOD-RIDGE

MIX DATA: EF TECHNOLOGY

CEMENT
FLY ASH
FINE AGGREGATE
COARSE AGGREGATE
AIR ENTRAINING AGENT
ADMIXTURES

WATER REDUCER
PLANT PLAST

LAFARGE, ASTM C-150 TYPE I/II STI F ASH ASTM C-618 CLAYTON SAND, ASTM C-33 TILCON #57, ASTM C-33 MBVR, MASTERBUILDERS

GLENUIM 7500, MASTERBUILDERS GLENUIM 7500, MASTERBUILDERS

WEIGHTS PER CUBIC YARD

		4500 PSI REG	¥4500 PSI PUMP SP
MIX ID:		16111587	46311589
CEMENT FLY ASH FINE AGGREGATE COARSE AGGREGATE WATER AIR ENTRAINING AGENT ADMIX: WATER REDUCER ADMIX: PLANT PLAST ADMIX:	(LB\$) (LB\$) (LB\$) (LB\$) (GAL) (OZ) (OZ) (OZ)	518 92 1275 1760 31.0 10.0 6.1 0.0	535 95 1362 1660 31.5 10.0 0.0 25.2 0.0
SLUMP AIR CONTENT WATER/CEMENT RATIO UNIT WEIGHT, FRESH	(") (%) (LB/LB) (PCF)	1"-3" 5+/-1.5 0.42 144.6	5"-8" 5+/-1.5 0.42 145.0

These mixes are designed to achieve the design strength if sampled and tested in accordance with all ACI and ASTM testing procedures by a certified technician. The concrete proportions have been selected in accordance with ACI 211 and established on the basis of laboratory trial mixtures following the guidelines of ASTM C192 and ACI 318.

3787

MATERIAL ANALYSIS

	% PASSING		
SIEVE SIZE	FINE AGG	COARSE AGG	
1 1 1/2"			
1"		100.0	
3/4"		94.8	
1/2"		48.6	
3/8"	100.0	31.2	
# 4	97.2	4.8	
# 8	88.9	2.5	
# 16	73.6		
# 30	50.1	-	
# 50	16.0		
#100	2.5		
#200	0.8		
FINENESS MODULUS	2.72		
SPECIFIC GRAVITY	2.65	2.70	

TEST RESULTS

COMPRESSIVE STRENGTH

AGE	4500 PSI REG	₩4500 PSI PUMP SP
***	3340	3410
7	3290	3470
28	5490	5550
	5380	5450
	5420	5590
	1 pp ps	
AVG	5430	5530



Description

Pozzolith 100 XR is a readyto-use liquid admixture for producing more uniform and predictable quality concrete. Placing and finishing requirements are facilitated because this admixture retards setting time. Pozzolith 100 XR admixture meets ASTM C 494/ C 494M requirements for Type B, retarding, and Type D, waterreducing and retarding, admixtures.

Applications

Recommended for use in:

- Prestressed concrete
- Precast concrete
- Reinforced concrete
- Shotcrete
- Lightweight or normal weight concrete
- Pumped concrete
- 4x4™ Concrete
- Pervious Concrete
- Rheodynamic®Self-Consolidating Concrete

POZZOLITH® 100 XR

Set Retarding Admixture

Features

- Reduced water content required for a given workability
- Retarded setting characteristics
- Controlled retardation depending on the addition rate
- Dead-load deflection can take place (before concrete sets) in extended pours for bridge decks, cantilevers, nonshored structural elements, etc.

Benefits

- Improved workability
- Reduced segregation
- Superior finishing characteristics for flatwork and cast surfaces
- Flexibility in scheduling of placing and finishing operations
- Offsets effects of early stiffening during extended delays between mixing and placing
- Helps eliminate cold joints
- Peak temperature and/or rate of temperature rise in mass concrete lowered thereby reducing thermal cracking
- Increased compressive and flexural strength

Performance Characteristics

Rate of Hardening: The temperature of the concrete mixture and the ambient temperature (forms, earth, reinforcement, air, etc.) affect the hardening rate of concrete. At higher temperatures, concrete stiffens more rapidly which may cause problems with placing and finishing. Pozzolith 100 XR admixture retards the set of concrete. Within the normal dosage range, it will generally extend the setting time of concrete containing normal portland cement approximately 1-1/2 to 8 hours compared to that of a plain concrete mixture, depending on job materials and temperatures. Trial mixtures should be made with materials approximating job conditions to determine the dosage required.

Compressive Strength: Concrete produced with Pozzolith 100 XR admixture will have rapid strength development after initial set occurs. If retardation is within the normal ASTM C 494/C 494M Types B and D specifications, Pozzolith 100 XR admixture will develop higher early (24-hour) and ultimate strengths than plain concrete when used within the recommended dosage range and under normal, comparable curing conditions.

When Pozzolith 100 XR admixture is used in heat-cured concrete, the length of the preheating period should be increased until initial set of the concrete is achieved. The actual heat-curing period is then reduced accordingly to maintain existing production cycles without sacrificing early or ultimate strengths.



Product Data: POZZOLITH® 100 XR

Guidelines for Use

Dosage: Pozzolith 100 XR admixture is recommended for use at a dosage of 3 ± 1 fl oz/cwt (195 \pm 65 mL/100 kg) of cementitious materials for most concrete mixtures using typical concrete ingredients. Because of variations in job conditions and concrete materials, dosage rates other than the recommended amounts may be required. In such cases. contact your BASF Construction Chemicals representative. Pozzolith 100 XR admixture may be used at less than the recommended dosage for the purpose of retardation only.

Product Notes

Corrosivity - Non-Chloride, Non-Corrosive: Pozzolith 100 XR admixture will neither initiate nor promote corrosion of reinforcing steel in concrete. This admixture does not contain intentionally-added calcium chloride or other chloride-based ingredients.

Compatibility: Pozzolith 100 XR admixture may be used in combination with any BASF Construction Chemicals admixtures. When used in conjunction with other admixtures, each admixture must be dispensed separately into the mix.

Storage and Handling

Storage Temperature: If this product freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. Do not use pressurized air for agitation.

Shelf Life: Pozzolith 100 XR admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your BASF Construction Chemicals representative regarding suitability for use and dosage recommendations if the shelf life of Pozzolith 100 XR admixture has been exceeded.

Packaging

Pozzolith 100 XR admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Material Safety Data Sheets: Pozzolith 100 XR admixture.

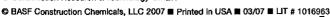
Additional Information

For additional information on Pozzolith 100 XR admixture or its use in developing a concrete mix with special performance characteristics, contact your BASF Construction Chemicals representative.

The Admixture Systems business of BASF Construction Chemicals is a leading provider of innovative additives for specialty concrete used in the ready mix, precast, manufactured concrete products, underground construction and paving markets throughout the NAFTA region. The Company's respected Master Builders brand products are used to improve the placing, pumping, finishing, appearance and performance characteristics of concrete.













3 40 00 03 40 00 03 70 00 04 05 16 Product Data
Cast-in-Place Concrete
Precast Concrete
Mass Concrete
Masonry Grouting

The Chemical Company

Description

GLENIUM® 7500 high-range water-reducing admixture is based on the next generation of polycarboxylate technology found in all of the Glenium 7000 series products. This technology combines state-of-the-art molecular engineering with a precise understanding of regional cements to provide specific and exceptional value to all phases of the concrete construction process.

GLENIUM 7500 admixture is very effective in producing concrete mixtures with different levels of workability including applications that require self-consolidating concrete (SCC). The use of GLENIUM 7500 admixture results in faster setting characteristics as well as improved early age compressive strength. GLENIUM 7500 admixture meets ASTM C 494/C 494M provisional compliance requirements for Type A. water-reducing, and Type F, high-range water-reducing, admixtures.

Applications

Recommended for use in:

- Concrete with varying water reduction requirements (5-40%)
- Concrete where control of workability and setting time is critical
- Concrete where high flowability, increased stability, high early and ultimate strengths, and improved durability are needed
- Production of Rheodynamic[®] Self-Consolidating Concrete (SCC) mixtures
- 4x4™ Concrete for fasttrack construction
- Pervious Concrete mixtures

GLENIUM® 7500

High-Range Water-Reducing Admixture

Features

- Excellent early strength development
- Controls setting characteristics
- Optimizes slump retention/setting relationship
- Consistent air entrainment
- Dosage flexibility

Benefits

- Faster turnover of forms due to accelerated early strength development
- Reduces finishing labor costs due to optimized set times
- Use in fast track construction
- Minimizes the need for slump adjustments at the jobsite
- Less jobsite QC support required
- Fewer rejected loads
- Optimizes concrete mixture costs

Performance Characteristics

Concrete produced with GLENIUM 7500 admixture achieves significantly higher early age strength than first generation polycarboxylate high-range water-reducing admixtures. GLENIUM 7500 admixture also strikes the perfect balance between workability retention and setting characteristics in order to provide efficiency in placing and finishing concrete.

Guidelines for Use

Dosage: GLENIUM 7500 admixture has a recommended dosage range of 2-15 fl oz/cwt (130-975 mL/100 kg) of cementitious materials. For most applications, dosages in the range of 5-8 fl oz/cwt (325-520 mL/100 kg) will provide excellent performance. For high performance and Rheodynamic Self-Consolidating Concrete mixtures, dosages of up to 12 fl oz/cwt (780 mL/100 kg) of cementitious materials can be utilized. Because of variations in concrete materials, jobsite conditions and/or applications, dosages outside of the recommended range may be required. In such cases, contact your local BASF Construction Chemicals representative.

Mixing: GLENIUM 7500 admixture can be added with the initial batch water or as a delayed addition. However, optimum water reduction is generally obtained with a delayed addition.

Product Data: GLENIUM® 7500

Product Notes

Corrosivity – Non-Chloride, Non-Corrosive: GLENIUM 7500 admixture will neither initiate nor promote corrosion of reinforcing steel embedded in concrete, prestressing steel or of galvanized steel floor and roof systems. Neither calcium chloride nor other chloride-based ingredients are used in the manufacture of GLENIUM 7500 admixture.

Compatibility: GLENIUM 7500 admixture is compatible with most admixtures used in the production of quality concrete, including normal, mid-range and high-range water-reducing admixtures, air-entrainers, accelerators, retarders, extended set control admixtures, corrosion inhibitors, and shrinkage reducers.

Do not use GLENIUM 7500 admixture with admixtures containing beta-naphthalene sulfonate. Erratic behaviors in slump, workability retention and pumpability may be experienced.

Storage and Handling

Storage Temperature: GLENIUM 7500 admixture must be stored at temperatures above 40 °F (5 °C). If GLENIUM 7500 admixture freezes, thaw and reconstitute by mechanical agitation.

Shelf Life: GLENIUM 7500 admixture has a minimum shelf life of 6 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your BASF Construction Chemicals representative regarding suitability for use and dosage recommendations if the shelf life of GLENIUM 7500 admixture has been exceeded.

Packaging

GLENIUM 7500 admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Material Safety Data Sheets: GLENIUM 7500 admixture.

Additional Information

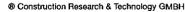
For additional information on GLENIUM 7500 admixture or on its use in developing concrete mixtures with special performance characteristics, contact your BASF Construction Chemicals representative.

The Admixture Systems business of BASF Construction Chemicals is a leading provider of innovative additives for specialty concrete used in the ready mix, precast, manufactured concrete products, underground construction and paving markets throughout the NAFTA region. The Company's respected Master Builders brand products are used to improve the placing, pumping, finishing, appearance and performance characteristics of concrete.

BASF Construction Chemicals, LLC Admixture Systems

www.masterbuilders.com

United States 23700 Chagrin Boulevard, Cleveland, Ohio 44122-5544 ■ Tel: 800 628-9990 ■ Fax: 216 839-8821 Canada 1800 Clark Boulevard, Brampton, Ontario L6T 4M7 ■ Tel: 800 387-5862 ■ Fax: 905 792-0651





The Chemical Company



Description

MB-VR neutralized vinsol resin admixture is used for entraining air in concrete. It meets the requirements of ASTM C 260, AASHTO M 154, and CRD-C 13.

Applications

Recommended for use in:

- Concrete exposed to cyclic freezing and thawing
- Production of high-quality normal or lightweight concrete (heavyweight concrete normally does not contain entrained air)

MB-VR™

Vinsol-Resin Air-Entraining Admixture

Features

Ready-to-use in the proper concentration for rapid, accurate dispensing

Benefits

- Increased resistance to damage from cyclic freezing and thawing
- Increased resistance to scaling from deicing salts
- Improved plasticity and workability
- Improved properties of mixtures used for making concrete block, concrete pipe and other precast products
- Reduced permeability increased watertightness
- Reduced segregation and bleeding

Performance Characteristics

Concrete durability research has established that the best protection for concrete from the adverse effects of freezing and thawing cycles and deicing salts results from: proper air content in the hardened concrete, a suitable air-void system in terms of bubble size and spacing, and adequate concrete strength, assuming the use of sound aggregates and proper mixing, transporting, placing, consolidation, finishing and curing techniques. MB-VR admixture can be used to obtain adequate freeze-thaw durability in a properly proportioned concrete mixture, if standard industry practices are followed.

Air Content Determination: The total air content of normal weight concrete should be measured in strict accordance with ASTM C 231, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method" or ASTM C 173/C 173M, "Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method." The air content of lightweight concrete should only be determined using the Volumetric Method.

The air content should be verified by calculating the gravimetric air content in accordance with ASTM C 138/C 138M, "Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete." If the total air content, as measured by the Pressure Method or Volumetric Method and as verified by the Gravimetric Method, deviates by more than 1-1/2%, the cause should be determined and corrected through equipment calibration or by whatever process is deemed necessary.

Guidelines for Use

Dosage: There is no standard dosage for MB-VR

admixture. The exact quantity of air-entraining admixture needed for a given air content of concrete varies because of differences in concrete making materials and ambient conditions. Typical factors that might influence the amount of air entrained include; temperature, cementitious materials, sand gradation, sand-aggregate ratio, mixture proportions, slump, means of conveying and placement, consolidation and finishing technique.

Product Data: M8-VR™

The amount of MB-VR admixture used will depend upon the amount of entrained air required under actual job conditions. In a trial mixture, use 1/4 to 4 fl oz/cwt (16-260 mL/100 kg) of cementitious materials. In mixtures containing water-reducing or set-control admixtures, the amount of MB-VR admixture needed may be somewhat less than the amount required in plain concrete.

Due to possible changes in the factors that can affect the dosage of MB-VR admixture, frequent air content checks should be made during the course of the work. Adjustments to the dosage should be based on the amount of entrained air required in the mixture at the point of placement. If an unusually high or low dosage of MB-VR admixture is required to obtain the desired air content, consult your BASF Construction Chemicals representative. In such cases, it may be necessary to determine that, in addition to a proper air content in the fresh concrete, a suitable air-void system is achieved in the hardened concrete.

Dispensing and Mixing: Add MB-VR admixture to the concrete mixture using a dispenser designed for airentraining admixtures; or add manually using a suitable measuring device that ensures accuracy within plus or minus 3% of the required amount.

For optimum, consistent performance, the air-entraining admixture should be dispensed on damp, fine aggregate or with the initial batch water. If the concrete mixture contains lightweight aggregate, field evaluations should be conducted to determine the best method to dispense the air-entraining admixture.

Precaution

In a 2005 publication from the Portland Cement Association (PCA R&D Serial No. 2789), it was reported that problematic air-void clustering that can potentially lead to above normal decreases in strength was found to coincide with late additions of water to air-entrained concretes. Late additions of water include the conventional practice of holding back water during batching for addition at the jobsite. Therefore, caution should be exercised with delayed additions to air-entrained concrete. Furthermore, an air content check should be performed after any post-batching addition to an air-entrained concrete mixture.

Product Notes

Corrosivity – Non-Chloride, Non-Corrosive: MB-VR admixture will neither initiate nor promote corrosion of reinforcing and prestressing steel embedded in concrete, or of galvanized floor and roof systems. No calcium chloride or other chloride-based ingredients are used in the manufacture of this admixture.

Compatibility: MB-VR admixture may be used in combination with any BASF Construction Chemicals admixture, unless stated otherwise on the data sheet for the other product. When used in conjunction with other admixtures, each admixture must be dispensed separately into the concrete mixture.

Storage and Handling

Storage Temperature: MB-VR admixture should be stored and dispensed at 35 °F (2 °C) or higher. Although freezing does not harm this product, precautions should be taken to protect it from freezing. If MB-VR admixture freezes, thaw at 35 °F (2 °C) or above and completely reconstitute by mild mechanical agitation. Do not use pressurized air for agitation.

Shelf Life: MB-VR admixture has a minimum shelf life of 18 months. Depending on storage conditions, the shelf life may be greater than stated. Please contact your BASF Construction Chemicals representative regarding suitability for use and dosage recommendations if the shelf life of MB-VR admixture has been exceeded.

Safety: MB-VR admixture is a caustic solution. Chemical goggles and gloves are recommended when transferring or handling this material. (See MSDS and/or product label for complete information.)

Packaging

MB-VR admixture is supplied in 55 gal (208 L) drums, 275 gal (1040 L) totes and by bulk delivery.

Related Documents

Material Safety Data Sheets: MB-VR admixture.

Additional Information

For suggested specification information or for additional product data on MB-VR admixture, contact your BASF Construction Chemicals representative.

The Admixture Systems business of BASF Construction Chemicals is a leading provider of innovative additives for specialty concrete used in the ready mix, precast, manufactured concrete products, underground construction and paving markets throughout the NAFTA region. The Company's respected Master Builders brand products are used to improve the placing, pumping, finishing, appearance and performance characteristics of concrete.

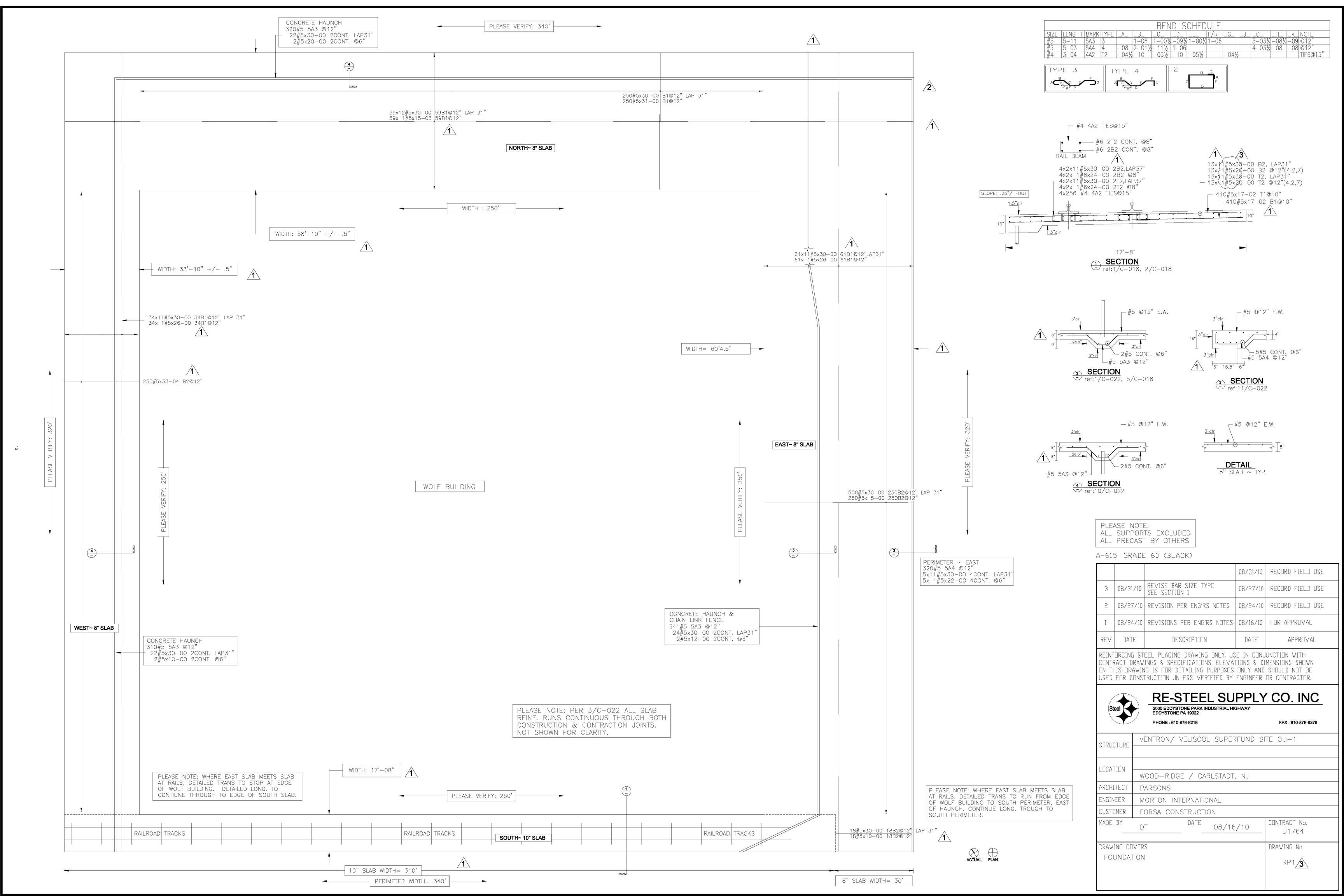
BASF Construction Chemicals, LLC Admixture Systems

www.masterbuilders.com

United States 23700 Chagrin Boulevard, Cleveland, Ohio 44122-5544 ■ Tel: 800 628-9990 ■ Fax: 216 839-8821 Canada 1800 Clark Boulevard, Brampton, Ontario L6T 4M7 ■ Tel: 800 387-5862 ■ Fax: 905 792-0651

™Construction Research & Technology GM8F

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CSI Code: 03 15 00



FEBRUARY 2009 (Supersedes March 2008)

FIBRE EXPANSION JOINT

Multi-Purpose, Expansion-Contraction Joint Filler

DESCRIPTION

FIBRE EXPANSION JOINT is composed of cellular fibers securely bonded together and uniformly saturated with asphalt to assure longevity. Wherever a cost-effective joint filler is required, FIBRE EXPANSION JOINT meets the need. Manufactured and marketed by W. R. MEADOWS since the early 1930s, FIBRE EXPANSION JOINT is backed by over 70 years of proven application experience. FIBRE EXPANSION JOINT is versatile, resilient, flexible and non-extruding. When compressed to half of its original thickness, it will recover to a minimum of 70% of its original thickness. FIBRE EXPANSION JOINT will not deform, twist or break with normal on-the-job handling. Breakage, waste and functional failure resulting from the use of inferior, foreign fiber materials can cost you time, dollars and can result in a substandard finished job, generating costly callbacks and rework expenses. However, the purchase and installation of FIBRE EXPANSION JOINT (a small segment of the total project's cost) contributes to both the final cost efficiency and functional success, far greater in proportion than its original cost.

USES

FIBRE EXPANSION JOINT is ideal for use on highways, streets, airport runways, sidewalks, driveways, flatwork, and scores of commercial and industrial applications subject to pedestrian and vehicular traffic.

FEATURES/BENEFITS

- Provides the ideal product for the majority of all expansion/contraction joint requirements.
- Non-extruding ... versatile ... offers a minimum 70% recovery after compression.
- This tough, lightweight, easy-to-use, semi-rigid joint filler is available in strips and shapes fabricated to your requirements.
- Easy to cut ... dimensionally stable ... not sticky in summer or brittle in winter.
- Provides neat, finished joints requiring no trimming.
- · Often copied ... but never equaled.
- Remains the standard of the industry today ... with over 70 years of proven and satisfactory performance.
- Can be punched for dowel bars and laminated to thicknesses greater than 1".

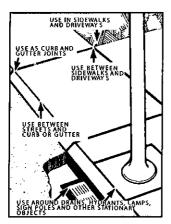
Fibre Specifications and Size Information

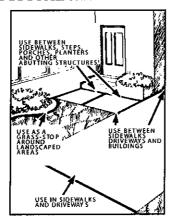
Conforms to or meets:	Thickness	Slab Widths	Standard Lengths	Weight per ft.3
• ASTM D 1751 • AASHTO M 213 • FAA Specification Item P-610-2.7 • Corps of Engineers CRD-C 508 • HH-F-341 F, Type 1	1/4", 3/8", 1/2" 3/4", 1" (6.4, 9.5, 12.7, 19.1, 25.4 mm)	36", 48" (91, 1.22 m)	10° (3.05 m) Also available: 5°,6°,12° (15, 1.83, 3.66 m)	>19 lb.

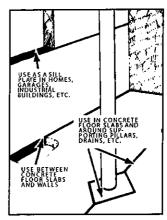
CONTINUED ON REVERSE SIDE...

W. R. MEADOWS, INC.

TYPICAL APPLICATIONS







APPLICATION

FIBRE EXPANSION JOINT is positioned against the forms, at interrupting objects or columns, and against abutting structures prior to the placement of concrete, FIBRE EXPANSION JOINT should be installed 1/2" (12.7 mm) below the concrete surface to accept the joint sealant. Before sealing, slide SNAP-CAP_® from W. R. MEADOWS over the top of the expansion joint. Place the concrete and screed to finish grade, as usual. When concrete is cured, insert a screwdriver through the top of SNAP-CAP, pull free and discard. For maximum protection from water infiltration and weathering, and to assure proper function, seal the joint with any approved hot- or cold-applied product, such as #164, 3405, HI-SPEC®, SAFE-SEAL, or SOF-SEAL® from W. R. MEADOWS.

LEED INFORMATION

May help contribute to LEED credits:

- MR Credit 4.1: Recycled Content: 10%
- MR Credit 4.2: Recycled Content: 20%
- MR Credit 5.1: Regional Materials: 10% Extracted, Processed & Manufactured Regionally
- MR Credit 5.2: Regional Materials: 20% Extracted, Processed & Manufactured Regionally

For most current data sheet, further LEED information, and MSDS, visit www.wrmeadows.com.



LIMITED WARRANTY

W. R. MEADOWS, INC. warrants at the time and place we make shipment, our material will be of good quality and will conform with our published specifications in force on the date of acceptance of the order. Read complete warranty. Copy furnished upon request.

Disclaimer

The information contained herein is included for illustrative purposes only, and to the best of our knowledge, is accurate and reliable. W. R. MEADOWS, INC. cannot however under any circumstances make any guarantee of results or assume any obligation or liability in connection

with the use of this information. As W. R. MEADOWS, INC. has no control over the use to which others may put its product, it is recommended that the products be tested to determine if suitable for specific application and/or our information is valid in a particular circumstance. Responsibility remains with the architect or engineer, contractor and owner for the design, application and proper installation of each product. Specifier and user shall determine the suitability of products for specific application and assume all responsibilities in connection therewith.

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Page 1

Date of preparation: 01/06/06 1103360

SECTION I

Manufacturer : W. R. MEADOWS, INC. - H M I S -

Address : 300 Industrial Drive | Health : 1 |

Telephone # : (847) 683-4500

Emergency # : 1-800-424-9300 Chemtrec

(Hazard Rating: 0=Least,1=Slight,2=Moderate,3=High,4=Extreme,*=Chronic)

Product Class : DIVISION 3 Mfg. code I.D. : 1103360

Trade Name : FIBRE EXPANSION JOINT FILLER

SECTION II-A HAZARDOUS COMPONENTS

SARA VAPOR PRESSURE LEL % by CAS# (@ 25 C) No. Component Weight 313 (mm Hg @ 20 C) N/A 1. Petroleum Asphalt 8052-42-4 35-40 NO N/A

None of the components of this product are recognized as carcinogenic. N/A: Not Applicable

FIBRE Expansion Joint is defined by OSHA (29 CFR Part 1910) as an "Article". A manufactured item which is formed to a specific shape or design during manufacture which does not release or otherwise result in exposure to a hazardous chemical under normal conditions of use.

SECTION II-B OCCUPATIONAL EXPOSURE LIMITS

OSHA ACGIH No. **PEL/TWA PEL/CEILING** PEL/STEL SKIN TLV/TWA TLV/CEILING TLV/STEL SKIN 5 mg/m3* N/E N/E N/E 5 mg/m3* N/E ΝÆ N/E * = Asphalt fumes N/E = Not established

SECTION III PHYSICAL DATA

Boiling Point : Not applicable % Volatile by volume : 5% (approximate) **Evaporation Rate** : 3.2 (N-BuAc = 1)% Volatile by weight : Not applicable Vapor Density : Not applicable Weight per gallon : Not applicable pH Level : Not applicable **Appearance** : Fibrous asphalt board

SECTION IV HEALTH INFORMATION

EYE CONTACT: May cause mechanical irritation. SKIN CONTACT: May cause mechanical irritation.

INHALATION: Under normal use this product is not hazardous via inhalation.

INGESTION: This product has a low order of toxicity. If symptoms of gastrointestinal irritation develop, seek medical attention.

SIGNS AND SYMPTOMS: None known with normal product use.

AGGRAVATED MEDICAL CONDITIONS: None known with normal product use.

OTHER HEALTH EFFECTS: From skin painting studies in laboratory animals, it has been concluded that some asphalts may possess weak carcinogenic activity. This means that workers who practice poor personal hygiene, and who are repeatedly exposed by direct skin contact with petroleum asphalt over many years, may potentially be at risk of developing skin cancer. Intermittent or occasional skin contact with petroleum asphalt is not expected to have serious health effects as long as personal hygiene measures, such as outlined in this material safety data sheet, are followed. In addition, asphalt vapors may contain polycyclic hydrocarbons, some of which are known to be carcinogenic. Therefore, prolonged breathing of vapors should be avoided.

SECTION V EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Flush eyes with water to remove fibers.

SKIN CONTACT: Flush with water to remove fibers. Wash affected area with soap and water if available.

INHALATION: None normally required. INGESTION: None normally required.

*** MATERIAL SAFETY DATA SHEET ***

Date of preparation: 01/06/06

FLAMMABILITY CLASSIFICATION

- NFPA : None - DOT : Not regulated

FIRE AND EXPLOSION HAZARDS

FLASH POINT: Greater than 400 degrees F

EXTINGUISHING MEDIA: Carbon Dioxide, water fog, foam, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS: Palletized material may reignite and spontaneously combust

UNUSUAL FIRE AND EXPLOSION HAZARDS: None recognized.

SECTION VII

SECTION VI

REACTIVITY

STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS AND MATERIALS TO AVOID: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Combustion may yield Carbon Dioxide, Carbon Monoxide, and/or incomplete combustion products.

SECTION VIII

EMPLOYEE PROTECTION

RESPIRATORY PROTECTION: None required with normal product use. If abraded, use of a dust filter respirator is recommended to prevent inhalation of fibers

PROTECTIVE CLOTHING: Cotton work gloves/Safety glasses.

ADDITIONAL PROTECTIVE MEASURES: Not applicable.

SECTION IX

ENVIRONMENTAL PROTECTION

SPILL OR LEAK PROCEDURES: Not applicable: product is a solid.

WASTE DISPOSAL: In some areas this product may be considered a non-hazardous special waste if disposed of in a permitted landfill. Consult Federal, State, and local regulations for compliance.

SECTION X

ADDITIONAL PRECAUTIONS

Prevent contact with fire. Prevent job-site damage.

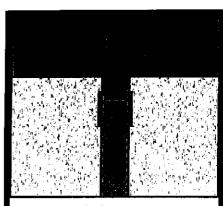
The information contained herein is based on the data available to us and is believed to be correct. However, we make no warranty, expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. We assume no responsibility for injury from the use of the product described herein.

Date of preparation: 01/06/06 FIBRE EXPANSION JOINT

REMOVABLE JOINT CAP STRIP

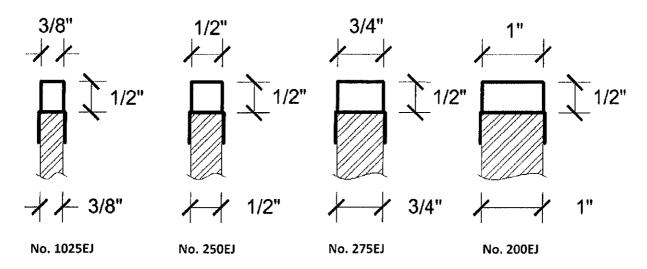
There's no need for inefficient and expensive handwork that used to be required to form expansion joints. Southern's Removable Joint Cap Strip is easy to use and provides a professional finish.

Removable Joint Cap Strip slides over the top of the expansion board just prior to concrete placement. The lower section of the cap is keyed in the concrete and the top section strips to create a reservoir for sealants.



The top half of the cap is stripped while the lower section remains to create a bond breaker. The formed reservoir is ready for sealant.

SIZES



All sizes are manufactured in 10 ft. lengths and packaged 500 ft. per carton.

REMOVABLE JOINT CAP STRIP

- is manufactured with strong, High Impact Polystyrene (HIPS)
- is easily cut with a hand or power saw
- is easily stripped by inserting a screwdriver and pulling up
- provides sharp, clean professional grooving is available in several sizes to accommodate most applications

13/4/11/5(0)

pectrem® 800/900 SL Low Modulus/Self Leveling Silicone Highway and Parking Structure Sealant

Product Description:

Spectrem 800 and Spectrem 900SL are low modulus, high performance, one-part, gun grade, silicone parking structure and highway joint sealants.

Basic Uses:

Spectrem 800 and Spectrem 900SL have exceptional physical properties making them ideal for sealing the most demanding dynamically moving joints and horizontal applications. Both are formulated for highway, airport, bridge joints, and parking structures where high movement occurs.

Limitations:

- Do not apply to damp or contaminated surfaces.
- · Use with adequate ventilation.

Packaging:

Quart cartridges (850 mL), 4.5 gallon (17.1 L) pails and 50 gallon (190 L) drums.

Made-To-Order Colors:

Limestone and Dark Gray

INSTALLATION Joint Design:

May be used in any joint design in accordance with accepted highway/ engineering practice. Spectrem 800 and Spectrem 900SL should be no thicker than 1/2" (12.7mm) and no thinner than 1/4" (6.4mm). Sealant accepts +100%/-50% of installed width; however, Tremco recommends joint movement design ±25% movement. Sealant surface should be recessed 1/8-1/2" below pavement surface.

Backer Rod:

Joint width		3/8"	1/2"	3/4"	1″
Recessed Bel Surface	0₩ % ″	3/8"	3/8"	3/4"	3/2"-1/2"
Sealant Thickness	1/4"	1/4"	' /4"	3/8"	1/2"
Backer Rod Diameter	3/8"	1/2"	5/8"	¹ /8"	1-¼"
Total Joint Depth	1-1/	1%-1%"	1%-1%"	1%-1%	21/23/;"

Surface Preparation:

For good adhesion, the joint interface must be sound, clean and dry. Portland cement joints should be fresh saw cut or sand blasted and blown clean with oil free compressed air.

Tooling & Cleaning:

Tooling is recommended with Spectrem 800 immediately after application to insure firm, intimate contact with the joint interface. For Spectrem 900SL, tooling is generally not required. Sealant should be recessed 3/8-1/2" below pavement surface. Cleaning can be accomplished with solvents such as IPA, Xvlol, Toluol or MEK while sealant is in uncured state.

Joint Backing

Closed cell polyethlyene backer rods are preferred as joint backing to control depth of sealant bead. Where depth of joint will prevent use of joint backing, an adhesive backed polyethylene tape must be installed to prevent three side adhesion. Joint backing must be dry at time of sealant application.

Application:

Spectrem 800/Spectrem 900SL are easy to apply with conventional caulking or highway sealing equipment. Fill joint while maintaining recess and tool, At 75°F (23.9°C), 50% R.H. a durable skin will form within 60 minutes.

Maintenance:

Damaged sealant can be repaired. Consult your Tremco Distributor or Representative for repair procedures.

Availability:

Immediately available from your local Tremco Field Representative, Tremco Distributor or Tremco Warehouse.

Warrantv:

Tremco warrant its Sealants to be free of defects in material, but makes no warranty as to appearance or color. Since method of application and on-site conditions are beyond our control and can affect performance, Tremco makes no other warranty, expressed or implied, including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, with respect to Sealants. Tremco's sole obligation shall be at, its option, to replace, or to refund the purchase price of the quantity of Sealant proved to be defective and Tremco shall not be liable for any loss or damage.

Typical Properties

Property	Spectrem 800 Typical Value	Spectrem 900SL Typical Value
Flow, Sag, Slump	Nil	Self leveling
Extrusion Rate	20-35 sec./20 g @ 60 psi	10-14 sec./20g @60 psi
Specific Gravity	1.35	1.3
Skin-Over Time, at 77° 50% RH	30-60 min.	30-80 min.
Tack-Free Time, at 77° 50% RH	60-90 min.	
Cure Time, at 77° 50% RH	7-14 Days	14 Days
Full Adhesion, at 77° 50 RH	14-21 Days	14-21 Days
As Cured - 25° C (77°F) 50% RH	21 Days Cured	7 Days Cured
Elongation	1000%	1000%
Modulus, at 100%, psi maximum	15-30	
Shore A	15	
Joint Movement Capability, +100/-50%, 10 cycles	No Failure	No Failure
Adhesion to Concrete, minimum percent elongation	+500%	+600%
Adhesion to Asphalt, minimum percent elongation		+600%

For MSDS and Spec Data Sheets, visit our website: www.tremcosealants.com



3735 Green Road • Beachwood, Ohio • 44122 • Phone: (216) 292-5000 • (800) 321-7906 220 Wicksteed Avenue • Toronto, ON M4H 1G7 • Phone: (416) 421-3300 • (800) 363-3213



BARACADE® WB 244

WATER BASED, PENETRATING WATER REPELLENT FOR HORIZONTAL SURFACES

DESCRIPTION

BARACADE WB 244 is a water based, oligomeric siloxane/silane, ready to use, deep penetrating water repellent. Water repellency is achieved via an impregnation of the substrate. BARACADE WB 244 is a colorless, odorless, non-staining, non-yellowing and non-film forming penetrant used to protect concrete surfaces without altering the appearance or texture of the treated surface.

PRIMARY APPLICATIONS

Sidewalks

- Parking decks
- · Bridge decks

· Industrial floors

• Ramps FEATURES/BENEFITS

- · Odorless, colorless and non-staining
- ♣ Can contribute to LEED points

- Non-yellowing
- . Non film-forming; no gloss or shine

TECHNICAL INFORMATION

Material Properties @ 75° F (24° C)	NCHRP Report No. 244 Reduction in chloride ion content
Flash point	1 day
Federal Specification SS-W-110C88%	1 day

PACKAGING

BARACADE WB 244 is packaged in 5 gal (18.9 L) pails and 55 gal (208 L) drums.

SHELF LIFE

1 year in original, unopened package.

COVERAGE

Approximate Coverage ft²/gal (m²/L)

Surface 1st

2nd

Dense 100 to 150 (2.45 to 3.68)

Porous 100 to 150 (2.45 to 3.68) 100 to 150 (2.45 to 3.68)

Because of variations in surface density, the following coverage rates are approximate and are intended for estimating purposes only. Use test applications on actual surfaces to accurately determine coverage rates. Extremely porous surfaces may require 2 coats of BARACADE WB 244. When two coats are required, apply the second coat on the still wet BARACADE WB 244 by following a "wet on wet" technique.

SPECIFICATIONS/COMPLIANCES

BARACADE WB 244 meets NCHRP 244 and SS W110C specifications.

DIRECTIONS FOR USE

Surface Preparation: Cure new concrete 21 days before application. Surface must be clean, dry and structurally sound. The substrate must also be free of all curing compounds, form release agents and any other contaminants which may prevent the proper penetration of BARACADE WB 244. Prior to application, moving joints or cracks must be properly sealed with an elastomeric joint sealant.



The Euclid Chemical Company

19218 Redwood Rd. • Cleveland, OH 44110 Phone: [216] 531-9222 • Toll-free: [800] 321-7628 • Fax: [216] 531-9596 www.euclidchemical.com





Non-moving cracks or voids wider than 1/64 inch (0.4 mm) must be filled with a suitable material. Surfaces must be dry for a minimum of 24 hours prior to application. Mask all adjacent surfaces including grass, plants, shrubs and asphalt to protect from drips or over spray. For surfaces that have had prior coatings or surface treatments, contact your local EUCLID representative for a recommendation.

Mixing: BARACADE WB 244 does not normally require mixing.

Application: For best results, BARACADE WB 244 should be applied using airless spray equipment. A garden sprayer may be used for smaller projects only when an airless sprayer is not available. To produce the proper material flow, reduce air pressure on pumping equipment and use spray tips with orifice sizes no smaller than 0.035 inches (0.9 mm). Larger tips may be required with some spray equipment to get desired material flow. Flood the surface with BARACADE WB 244 using a low pressure sprayer. A roller or broom may also be used. Distribute material evenly. Do not allow the material to puddle.

CLEAN-UP

Clean drips, runs, and overspray residue while still wet, using detergent and water. Dried material may require mechanical abrasion for removal. Clean application and spray equipment with detergent and water immediately following use.

PRECAUTIONS/LIMITATIONS

- Store material between 40°F to 90°F (4°C to 32°C)
- PROTECT FROM FREEZING.
- Temperature of air and surface must be at least 40°F (4°C) and rising.
- · Do not dilute.
- · Do not allow to puddle. All product should penetrate the substrate with no surface build-up.
- · Do not apply if rain is expected within 12 hours.
- BARACADE WB 244 can be applied to pH neutral surfaces, however longer cure times may be required to develop full repellency.
- BARACADE WB 244 is non flammable and non hazardous.
- BARACADE WB 244 may exhibit minor settling upon storage. Agitation prior to use may be necessary.
- In all cases, consult the Material Safety Data Sheet before use.

Rev. 10.09

APPENDIX D.4 – UNDEVELOPED AREA CAP

Undeveloped Area Cap Material Index

Dense Grade Aggregate (DGA)	2
Biotic Barrier Stone (NJDOT No. 1)	5
Barrier/Seperation Material	7
Topsoil	10

TILCON-NY Pompton Lakes Quarry Fax 973-659-3978

BROAD STREET • POMPTON LAKES, N.J. • 973-366-7741

DGA (2.01 J)

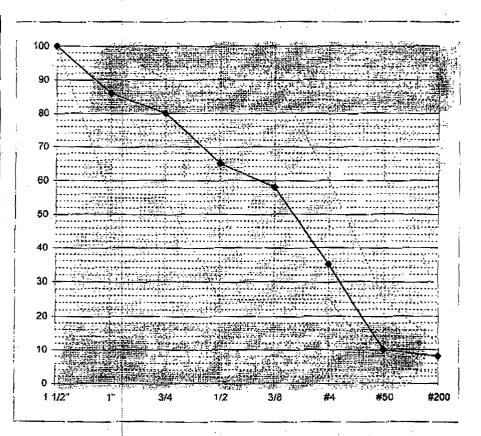
Typical Gradation DGA/I3 (Granite)

·	Project		
		٠.	

Contractor
Sevenson Environmental

Sp. Gr	2.84
Loose	101
Rodded	120

	Typical	Prod.	Target
	% Pass	Low	High
1 1/2"	100	100	100
1"	86	55	100
3/4	80	55	90
1/2	65	25	90
3/8	58	25	90
#4	35	25	60
#50	10	5	25
#200	8	3	12



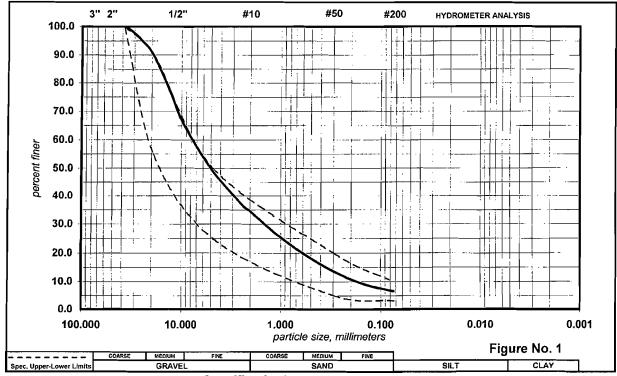
Tilcon-NJ confirms that the DGA/I3 (Granite) available at Pompton Lakes Quarry conforms to the quality requirements of section 901 of *The New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction*. It is defined as virgin Gneiss mined at Pompton Lakes Quarry, Broad Street, Blk 60-Lots 60.01-60.02 Borough of Pompton Lakes, Morris County The material is identified on the job with Tilcon NJ delivery tickets.

The unit weights and voids are for process control and should be verified by the contractor before use.

SOR TESTING LABORATORIES, INC.

98 Sand Park Road - Cedar Grove, NJ 07009
Tel.: (973) 239-6001 Fax: (973) 239-8380 http://www.sorlabs.com

PARTICLE SIZE DISTRIBUTION TEST REPORT



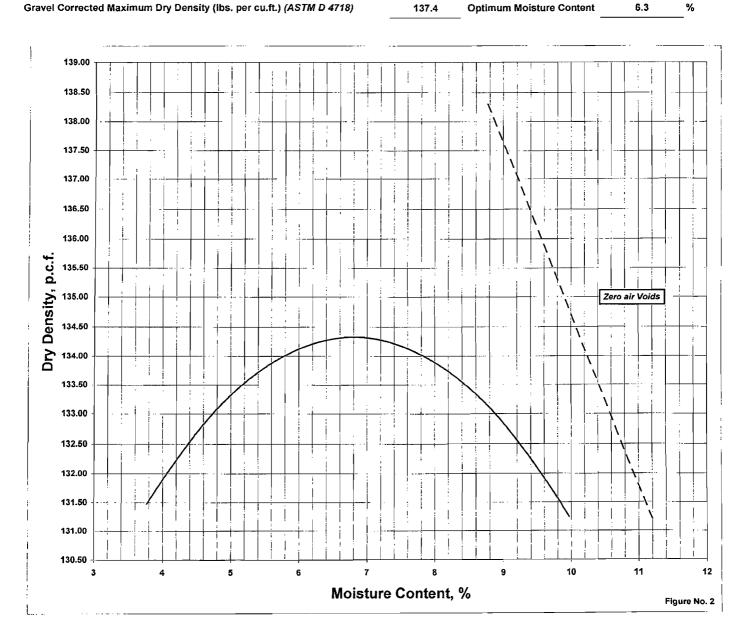
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Sp	\sim	ıtı	\sim	tin	n
JU	cu	"	υa	uv	"

Sieve Size	% Finer	Min.(%)	Max.(%)		Sample Id	entificatio	n
4"				Sample No.:	_	DC	BA T
2 1/2"				Lab No.:		A10)-76
2"				Source/Loca	tion:	Pompto	n Lakes
1 1/2"	100.0	100	100	Description:			
1"	94.0			D. Gray. Bro	own cf GRAVE	L some, cf	Sand, trace Silt
3/4"	89.7	55	90	1			
5/8"		_		samp	le description in accor	dance with Burmis	ter System
1/2"	76.2			LL:	PI	_ : _	PI:
3/8"	65.7					_	
5/16"				As Receiv	ed Moisture	Content:	%
1/4"							
#4	48.9	25	50	Classificatio	n:	_	
#6] ι	JSCS:	[GW-GM]
#8	36.6			AAS	нто:		
#10	34.5			Remarks:			
#14				Sampl	e received in	lab on Apri	l 07, 2010
#16	27.5						
#20							
#30	19.8						
#40				Client:	Sevenson	Environme	ntal Services
#50	13.6	5	20	Project:	Ventron /	Velsicol Su	perfund Site
#60				7			ĺ
#100	9.2			Location:	Wood	lbridge, Nev	w Jersey
#200	6.5	3	10	Date:		8-Apr-10	
* - NJ DOT DG	A Spec.		•	Job No.:	10-127	Report	No.: 10-611

SOR TESTING LABORATORIES, INC.

98 Sand Park Road - Cedar Grove, NJ 07009 (973) 239 6001 Fax: (973) 239 8380 http://www.sorlabs.com

Report for:	Sevenson Environmenta	nmental Services Lab. No.: A10-76			Date:	4/8/10	
Project:	Ventron / Velsicol Superfund Site, , Woodbridge, New Jersey					Job No.:	10-127
Source:	Pompton Lakes			_		Report No.:	10-611
			MOISTURE - DENSIT	Y RELATIONS	TEST		
Sample No.:	DGA		Material:	D. Gray. Brown	cf GRAVEL some, cf Sand, t	race Silt	[GW-GM]
Test performe	ed in accordance with:	AST	M D 1557, Method 'C'			Sp. Gr. (assumed)	2.75
Fraction used	for test:	- 3/4"		Rammer:	Mechanical		
Diameter of m	old:		6"	No. of layers:	5	Blows per layer:	56
Maximum Dry	Density (lbs. per cu.ft.)			134.3	Optimum Moisture Conten	t 6.8	%



BIOTIC BARRIER STENE 2.01 I

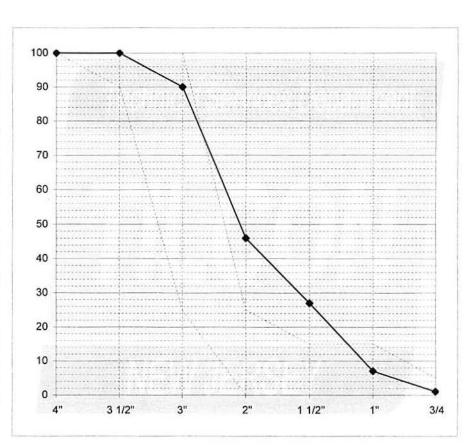
Typical Gradation, #1 (2 1/2" Clean)

Project	
Ventro Site	
Woodridge	

viromental

2.92
95.1
107

	Typical	Prod.	Target
	% Pass	Low	High
4"	100	100	100
3 1/2"	100	90	100
3"	90	25	100
2"	46		25
1 1/2"	27		15
1"	7		15
3/4	1		5

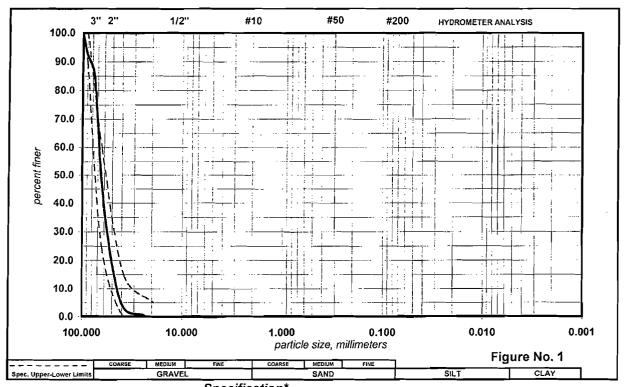


Tilcon Inc confirms that the #1 (2 1/2" Clean) produced, manufactured, and supplied is manufactured from 100% crushed virgin ledge rock and to the best of our knowledge, information and belief contains no other constituent materials of any kind and is not contaminated pursuant to any applicable remediation standards. The material is defined as virgin stone, from a commercial source, mined at Riverdale Quarry, 125 Hamburg Turnpike, Road, Blk 13-Lots 25-29 Borough of Riverdale, Morris County.

SOR TESTING LABORATORIES, INC.

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PARTICLE SIZE DISTRIBUTION TEST REPORT



		Specif	ication*			_	
Sieve Size	% Finer	Min.(%)	Max.(%)		Sample Ide	ntificatio	n
4" 100 mm)	100.0	100	100	Sample No.:		Biotic Bar	rier Stone
3½" (90 mm)	92.5	90	100	Lab No.:		A10-9	97-01
3" (75 mm)	85.4			Source/Location	on:	Rive	rdale
2½" (63 mm)	47.4	25	60	Description:			
2" (50 mm)	20.6			1	Gray Barr	ier Stone	
1½" (38.1 mm)	3.3	0	15]			
1" (25 mm)	0.4			sample d	escription in accorda	nce with Burmis	ter System
3/4" (19 mm)		0	5	LL:	PL	:	PI:
3/8" (9.5 mm)]			
5/16" (8 mm)				As receive	d Moisture	Content:	%
1/4" (6.3 mm)		_	_				
#4 (4.75 mm)	_			Classification:		•	
#6 (3.35 mm)				US	CS:		
#8 (2.36 mm)	-			AASH'	TO:		
#10 (2 mm)				Remarks:			
#14 (1.4 mm)				Sample r	eceived in la	ab on Apri	l 29, 2010
#16 (1.18 mm)							
#20 (850 μm)							
#30 (600 μm)]			
#40 (425 µm)							
#50 (300 µm)				Client:	Sevenson E	nvironme	ntal Services
#60 (250 µm)				Project:	Ventron / V	elsicol Su	perfund Site
#100 (150 µm)				Location:	Wood-F	Ridge, Nev	w Jersey
#200 (75 µm)				Date:		30-Apr-10)
* - NJ DOT No.1	Spec. for Coar	se Aggred	ates	Job No.:	10-127	Report I	No.: 10 -941





April 8, 2010

Sevenson Environmental Services, Inc 2749 Lockport Road Niagara Falls, NY 14305

Attn: Jason

Re: 5 Park Place East Wood Ridge, NJ

To whom it may concern:

Please be advised that the Woodbury Clay, Maddox Materials LLC proposes to supply to the above referenced project originates from Toll Brothers Regency located on 656 Spotswood Englishtown Rd. Monroe, NJ, Middlesex County Tax Map Block 35 Lot 2.02.

The site was historically a virgin wooded lot being used as a mining operation now being developed for residential housing. To the best of our knowledge, the material is not contaminated pursuant to any applicable remediation standards. Our belief is based on the fact that this site has been found to be acceptable for residential development and has not been used for any industrial or waste handling activities.

If you need any additional information please contact me at 732-251-0054.

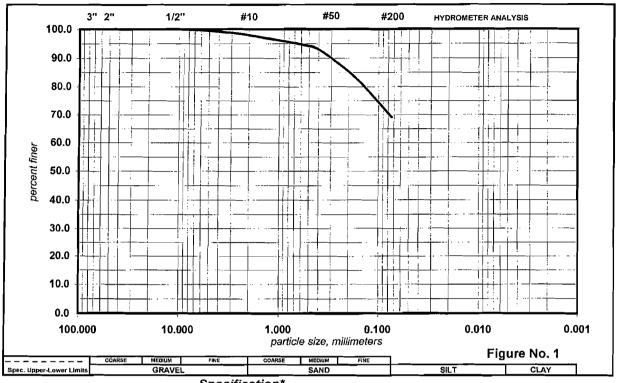
Respectfully submitted,

William Maddox Member

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Tel.: (973) 239-6001 Fax: (973) 239-8380 http://www.sorlabs.com

PARTICLE SIZE DISTRIBUTION TEST REPORT

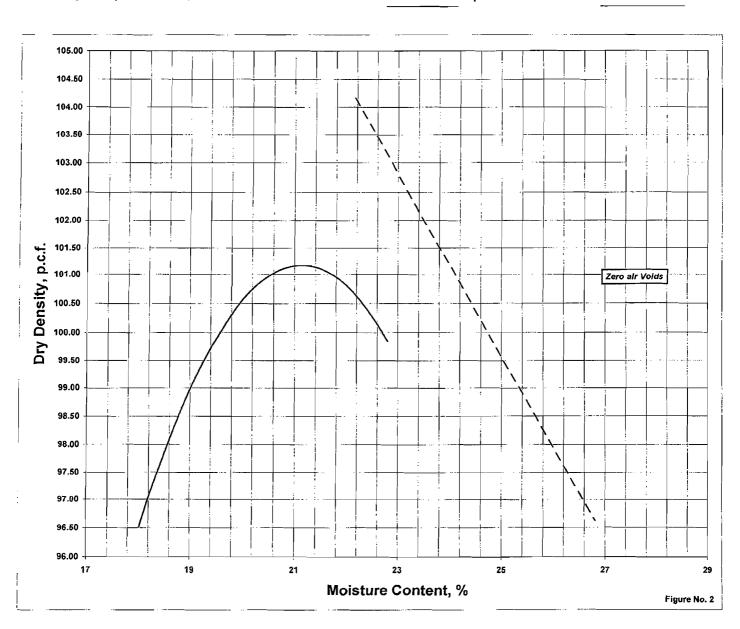


		Specif	ication*	
Sieve Size	% Finer	Min.(%)	Max.(%)	Sample Identification
3" (75 mm)				Sample No.: Separation Barrier Layer
2 1/2" (63 mm)		<u> </u>		Lab No.: A10-80
2" (50 mm)				Source/Location: Maddox
1 1/2" (38.1 mm)				Description:
1" (25 mm)				V. Dark Gray CLAY & SILT and, cf Sand, trace fine Gravel
3/4" (19 mm)				
5/8" (16 mm)				sample description in accordance with Burmister System
1/2" (12.5 mm)				LL: 38 PL: 26 PI: 12
3/8" (9.5 mm)	100.0			
5/16" (8 mm)				As received Moisture Content: 31.5 %
1/4" (6.3 mm)				1
#4 (4.75 mm)	99.5			Classification:
#6 (3.35 mm)				USCS: [CL-ML]
#8 (2.36 mm)	•			AASHTO:
#10 (2 mm)	98.0			Remarks:
#14 (1.4 mm)				Sample received in lab on April 09, 2010
#16 (1.18 mm)				1
#20 (850 µm)	<u> </u>			Permeability, k: 8.9 x 10 ⁻⁶ cm/s (ASTM D5084)
#30 (600 µm)	94.7			1
#40 (425 µm)	93.4			1
#50 (300 µm)				Client: Sevenson Environmental
#60 (250 µm)	88.1			Project: Ventron / Velsicol Superfund Site
#100 (150 µm)	81.3			Location: Wood-Ridge, New Jersey
#200 (75 µm)	69.2			Date: 12-Apr-10
* _				Job No.: 10-127 Report No.: 10-774

SOR TESTING LABORATORIES, INC.

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Report for:	Sevenson Environmental		Lab. No.:	A10-80	Date:	4/12/10	
Project:	Ventron / Velsicol Superfo	und Site, ,	Wood-Ridge, New Jersey			Job No.:	10-127
Source:	Maddox					Report No.:	10-774
	_		MOISTURE - DENS	TY RELATION	S TEST		
Sample No.:	Separation Barrier Layer		Materia	l: V. Dark Gray	CLAY & SILT and, cf Sand, tra	ace fine Gravel	[CL-ML]
Test performe	ed In accordance with:	_ А	STM D 1557, Method 'C'			Sp. Gr. (assumed)	2.65
Fraction used	i for test:	- 3/4"		Rammei	: Mechanical		
Diameter of m	nold:		6"	— No. of layers: —	5	Blows per layer:	56
Maximum Dry	Density (lbs. per cu.ft.)			101.2	Optimum Moisture Conte	nt 21.2	%



S & S ENVIRONMENTAL SCIENCES, INC.

Environmental Engineering, Testing and Consultation

98 Sand Park Road, Cedar Grove, NJ 07009 Tel (973) 857-7188 Fax (973) 239-8380

Kamil Sor, Ph.D. Yilmaz Arhan, Ph.D. Orhun Sor, P.E. Peter G. Micklus, P.E. Kenneth J. Rowbothem, P.E.

This report is the confidential property of the Client, and information contained may not be published or reproduced without our written permission.

	Sevenson Environmental Services						
Project:	Ventron/Velsico	Ventron/Velsicol Superfund Site OU-1, Wood-Ridge, New Jersey					
Subject:	Laboratory Analysis of Maddox Topsoil Sample						
Job No.:	10-127 (STL)	Report Number:	10-E-335	Date:	10-28-2010		

We present herewith the laboratory test results of the topsoil sample received on October 20, 2010. The sample (designated as Maddox topsoil) was collected by a representative of Sevenson Environmental Services on October 20, 2010, and delivered to our laboratory. As requested by the Client, the sample was analyzed for the NJDEP Clean Fill Criteria (based on the NJDEP Residential Direct Contact Soil Remediation Standards; copy of list attached).

The analyses were performed by Integrated Analytical Laboratories, LLC (IAL) (NJDEP Lab ID No. 14751). The test results are summarized in Table No. 1. A copy of the sample chain-of-custody form and a copy of the preliminary faxed IAL laboratory summary report are attached.

The test results were compared to the NJDEP Clean Fill Criteria (based on Residential Direct Contact Soil Remediation Standards). Based on the laboratory data, it is our opinion that the sample received and analyzed met all of the NJDEP Soil Remediation Standards/Clean Fill Criteria.

If there are any questions or if we can be of further assistance in this matter please call us.

Very truly yours,

S & S ENVIRONMENTAL SCIENCES, INC.

Yilmaz Arhan, Ph.D

Vice President

YA/ya

Attachments: (1) Sample Chain of Custody Form

(2) IAL Laboratory Summary Report

(3) NJDEP Soil Remediation Standards List

cc: (1) Client (Attn: Mr. Jayson Stark) (Fax No. 201-933-1996)

SOR TESTING LABORATORIES, INC.

Report No.10-2606 Page 2

TEST RESULTS

Soil Properties	Topsoil
Color	Reddish Brown
pH	6.3
Organic Matter, %	4.4
Specific Conductance, micromhos/cm	105
Total Salts, mg/kg	80
Texture: (*):	Clay Loam
(U.S.D.A. Classification)	
■ % Sand (2.0 - 0.05 mm)	17
■ % Silt (0.05 - 0.002 mm)	55
■ % Clay (<0.002 mm)	28
Available Nutrients:	
(lbs. per Acre)	
■ Nitrogen (NH₄ and NO₃)	32
■ Phosphorus (P)	122
■ Potassium (K)	175

^(*) Gravel content (>2.0 mm = 3%). Combined sieve and hydrometer test results are presented on Attachment -1.

CONCLUSIONS

- 1. The topsoil tested is suitable for use as topsoil.
- For optimum grass and shrub growth, the following treatments are suggested:
 - Add 10 lbs. of a 10-6-4 fertilizer per 1000 square feet area.

Very truly yours,

SOR TESTING LABORATORIES, INC.

Kamil Sor, Ph.D.

President

KS/Is

Attachment

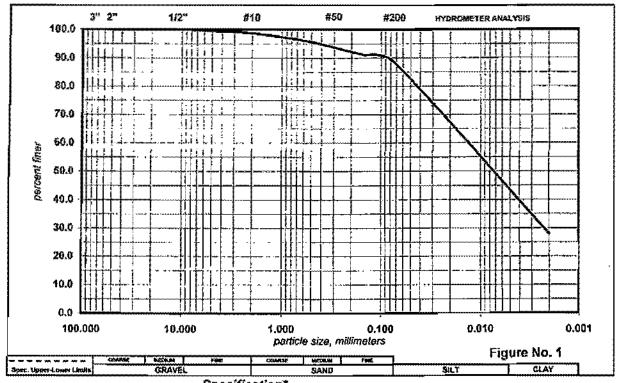
cc: (1) Client, Attn: Jayson Stark

E-Mail: jstark@sevenson.com

SOR TESTING LABORATORIES, INC.

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Tel.: (973) 239-6001 Fax: (973) 239-8380 http://www.soriabs.com

PARTICLE SIZE DISTRIBUTION TEST REPORT



Sieve Size	% Finer		ication*	T Com	ple Identificatio	•
	30 1,11421	Min.(%)	Max.(%)	<u> </u>		
3* (75 mm)	***************************************		<u> </u>	Sample No.:		soil
2 1/2" (63 mm)			<u> </u>	Lab No.:	ATU	-254
2" (50 mm)				Source/Location:		
1 1/2" (38.1 mm)				Description:		
1* (25 mm)				D.Brown Clayey Si	LT and, of Sand, t	race fine Gravel
3/4" (19 mm)						
5/8* (16 mm)				sample descripco	o in accordance wi to Bunni	stor Sy ssia m
1/2" (12.5 mm)			1	LL:	PL:	PI;
3/8" (9.5 mm)	100.0					
5/16" (8 mm)				As received Mo	isture Content:	%
1/4" (6,3 mm)						
#4 (4.75 mm)	99.5		<u> </u>	Classification:		
#6 (3.35 mm)		1		USCS:	[ML]	
#8 (2.36 mm)		<u> </u>		AASHTO:		
#10 (2 mm)	98.8			Remarks:		
#14 (1,4 mm)			•	Sample receive	d in lab on Octol	жr 20, 2010
#16 (1.18 mm)						
#20 (850 µm)				1		
#30 (500 µm)	96.1	ĺ				
#40 (425 j <i>a</i> m)	95.1	***************************************				
#S0 (300 µm)				Client: Seve	nson Environme	intal Services
#60 (250 µm)	93.0		<u> </u>	Project: Vent	tron / Velsicol St	perfund Site
#100 (150 µm)	91,1				Nood-Ridge, Ne	*
#200 (75 µm)	88.5			Date:	21-Oct-1	•
·*		***************************************		Job No.: 10-1	27 Report	10.10.76.0K

APPENDIX D.5 – VERTICAL BARRIER WALL

OM&M Plan for Ventron Velsicol Superfund Site Operable Unit 1

Vertical Barrier Wall Material Index

Sheet Pile Section Properties	2
Coal Tar Epoxy Coating Product Information	3
DeNeef Joint Sealant Product Information	12
Handling Hole Closure Materials	19
Utility Crossing Installation Plan	21
Utility Crossing Shop Drawing	22
Link-Seal Product Information	23
Packing Slip for Installed Link-Seals	32

AZ19-700 Page 1 of 1



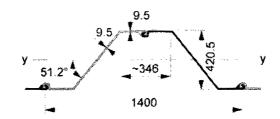
Sitemap

Calculation

NL | EN | FR



Profile : AZ 19-700



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Index

Steel sheet piling

Z sections

U sections

Straight web sections

Cold formed sheet piles

Tube combined walls

HZ combined walls Used sheet piles

Steel tubes

HP foundation piles

End products Driving equipment

Accessories

Download Autocad DWG or DXF file.

	Sectional area	Mass per m	Moment of inertia	section modulus	of gyration	Coating area
	cm ²	kg/m	cm ⁴	cm ³	cm	m²/m
Per S	101.9	80.0	28560	1310	16.50	0.93
Per D	203.8	160.0	55130	2620	16.50	1.86
Per m of wall	145.6	114.3	39380	1870	16.50	1.33

^{*}One side, excluding inside of interlocks. S = Single pile D = Double pile

Disclaimer

product data



Selection & Specification Data

Generic Type

Coal Tar Epoxy

Description

Renowned high build coal tar epoxy for protection for steel and concrete in single or two-coat applications in a broad variety of aggressive industrial applications.

Features

· Excellent chemical, corrosion and abrasion resistance

 High-build, 16-24 mils (400-610 microns) in a single coat (up to 35 mils with force curing)

 Compatible with controlled cathodic protection

· Suitable for use in exposures as referenced in the following specifications*:

•Corp of Engineers C-200, C200a

AWWA C-210 for exterior

•SSPC-Paint 16

•Steel Tank Institute Corrosion Control System STI-P3

Color

Black (0900)

Finish

Gloss. Will discolor, chalk and lose gloss in sunlight exposure.

Primers

Self-priming, Carboguard 888, or others as recommended

Topcoats

Not recommended

Dry Film Thickness Normally 16.0 mils (400 microns) in one or

two coats.

Total dry film thickness less than 8 mils (200 microns) or in excess of 35 mils (610 microns) is not recommended. Wet-on-wet spray techniques should be used for high thicknesses allowing time for solvents to flash

between passes.

Solids Content

By Volume:

74% ± 2%

Theoretical Coverage Rate

1187 mil ft2 (29.1 m2/l at 25 microns) Allow for loss in mixing and application

VOC Values

As supplied:

1.85 lbs/gal (222 g/l)

Thinned:

20 oz/gal w/ #10:* 2.6 lbs/gal (309 g/l) 25 oz/gal w/ #10: 2.7 lbs/gal (327 g/l)

These are nominal values.

*Maximum thinning for 250 g/l restricted areas

is 6 oz/gal.

Dry Temp. Resistance Continuous:

Non-Continuous: 370°F (190°C)

350°F (177°C)

Wet Temp.

Immersion temperature should not exceed

Resistance 120°F (49°C).

Limitations

Do not use for potable water requirements

August 2005 replaces March 2003

Substrates & Surface Preparation

General

Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere

with adhesion of the coating.

Steel

Immersion: Non-Immersion:

SSPC-SP10 SSPC-SP6

SSPC-SP2 or SP3 as minimum requirement. Surface Profile: 2.0-3.0 mils (50-75 micron)

Concrete

Concrete must be cured 28 days at 75°F (24°C) and 50% relative humidity or equivalent. Prepare surfaces in accordance with ASTM D4258 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require surfacing.

Performance Data

Test Method	System	Results	Report #	
ASTM D4060 Abrasion	curlar CS17 which		02877	
ASTM D4541 Adhesion	Blasted Steel 2 cts. 300M	1443 psi (Pneumatic)	02877	
ASTM D2794 Blasted Steel 2 cts. 300M		Impact site diameter. Inches: 3/8, 3/8, ¼ 100 in/lbs Gardner Impactor at ½ in. diam.	02877	
ASTM B117 Blasted Steel 2 cts. 300M		No blistering, rusting or delamination. No measurable undercutting at scribe after 2000 hrs.	02938	

Test reports and additional data available upon written request.

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to varily correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee of our products to conform to Carboline quality control. We assume no responsibility for coverage, performance or injuries resulting from use. Liability, if any, is limited to replacement of products. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE EXPRESS OR IMPUED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, Carboline® and Bitumastics are registered trademarks of Carboline Company.

3

^{*} Disclaimer: Bitumastic 300M is a proprietary formula that is not necessarily formulated to the exact compositional guidelines set forth in some of these standards. Minor deviations that control and improve application characteristics may be present, but does not have a detrimental effect on the suitability for use outlined therein.

Bitumastic® 300M

Application Equipment

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results. General Guidelines:

Spray Application (General)

This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Conventional Spray

Pressure pot equipped with dual regulators, 3/8° I.D. minimum material hose, with 50' maximum material hose .086" I.D. fluid tip and appropriate air cap.

Airless Spray

Pump Ratio: 30:1 GPM Output: 3.0 (min.) Material Hose: 1/2" I.D. (min.) Tip Size: .023-.035" Output PSI: 2100-2500 Filter Size: 30 mesh

Teflon packings are recommended and available

from the pump manufacturer.

Use a medium bristle brush.

Brush & Roller (General)

Recommended for touch up, striping of weld seams and hard-to-coat areas only. Avoid excessive re-

brushing or re-rolling.

Brush Roller

Mixino

Use a short-nap synthetic roller cover with phenolic

Mixing & Thinning

Power mix separately, then combine and power mix for a minimum of two minutes. DO NOT MIX PARTIAL KITS.

Ratio

4:1 Ratio (A to B)

Thinning

Up to 20 oz/gal (16%) w/ #10

Up to 25 oz/gal (20%) w/ #10 for the first coat application to concrete. Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Pot Life

75°F (24°C)

2 Hours 1 Hour

90°F (32°C)

Pot life ends when coating loses body and begins to

Cleanup & Safety

Cleanup

Use #2 Thinner or Acetone. In case of spillage, absorb and dispose of in accordance with local

applicable regulations.

Safety

Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

Caution

This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Normal	60-85°F (16-29°C)	60-85°F (16-29°C)	60-85°F (16-29°C)	0-80%
Mınimum	50°F (10°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	90°F (32°C)	125°F (52°C)	110°F (43°C)	90%

Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions.

Curing Schedule

Surface Temp. & 50% Relative Humidity	Dry to Touch	Minimum Recoat Time	Maximum Recoat Time	Cure for Immersion
50°F (10°C)	8 Hours	10 Hours	24 Hours	14 Days
75°F (24°C)	4 Hours	6 Hours	24 Hours	7 Days
90°F (32°C)	2 Hours	1 3 Hours	24 Hours	5 Days

These times are based on a 16.0 mil (400 micron) dry film thickness. Higher film thickness, insufficient ventilation, high humidity or cooler temperatures will require longer cure times. Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may result in a surface haze. Any haze or blush must be removed by water washing before recoating. If the maximum recoat time is exceeded, the surface must be abraded by sweep blasting pnor to the application of additional costs. Holiday Detection (if required): Wet sponge types may be used if the dry film thickness is below 20 mils (500 microns). High voltage spark testing should be used when the dry film thickness exceeds 20 mils (500 microns). Refer to NACE RP0188-90 for specific procedures.

Force Curing (recommended for thicknesses above 24 mils) Hold substrate temperature at 150°F for 8 hours and

150°F (65°C) material will be ready to handle and ready for

immersion service.

Packaging, Handling & Storage

Shipping Weight (Approximate)

1.25 Gallon Kit 12 lbs (6 kg)

5 Gallon Kit 50 lbs (26 kg)

Flash Point (Setaflash)

75°F (24°C) for Part A >200°F (93°C) for Part B

Storage (General)

Store Indoors.

Storage Temperature & Humidity

40° -110°F (4°-43°C) 0-100% Relative Humidity

Shelf Life

Part A: Min. 24 months at 75°F (24°C) Part B: Min. 36 months at 75°F (24°C)

*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.



350 Hanley Industrial Court, St. Louis, 340 63144-1599 314/644-1000 314/644-4617 (fax) www.carboling.com

An RPM Company

August 2005 replaces March 2003

To the best of our knowledge the technical data contained herein is true and accurate on the data of publication and is subject to change without prior notice. User must contact Carboline Company is very correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee our products to conform to Carboline quality control. We assume no responsibility to coverage, performance or injuries resisting from use. Liability, if any, it injuried to replacement of products. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE EXPRESS OR INPULIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, Carboling® and Biumpstice are registered Wadeharks of Carbolina Company.

ADVANTAGES cont.

- Easy application with standard caulking guns
- Durable cured material will exceed the life of the structure.
- Good chemical resistance *
- Resistant to petroleum products, greases, mineral and vegetable oils

(*) For Chemical resistance contact the Technical Service Department @ 800-732-0166

PACKAGING

10.5 oz.	20 oz.
cartridge	sausage
12 per carton	12 per carton
6 lbs. net	24 lbs, net
1 pallet = 105	1 pallet = 60
cartons 630	cartons 1500
lbs.	lbs.
Weight per	Weight per
cartridge:	sausage:
1.2 lbs. gross	2.2 lbs. gross
1.1 lbs. net	2.0 fbs. net

LIMITATIONS

Applied at temperatures below 40°F the material will take approx. 10 to 15 days to cure (material cures slower at cooler temperatures and conversely working and cure times will be substantially reduced at higher temperatures).

SURFACE PREPARATION .

Refer to De Neef Surface Preparation Guidelines for more details.

INSTALLATION PROCEDURES

SWELLSEAL® Gungrade WA should be applied onto a dust-free concrete surface. The surface can be rough or smooth, moist or dry. Application Method for 10.5 oz. Cartridges: Break the moisture proofing aluminum foil on the top of the cartridge and remove the plug from the bottom. Screw on the nozzle and cut diagonally at the appropriate position. Place the cartridge into the caulking gun.

For 20oz. Sausages: Put the sausage in the empty tube of the bulk caulking gun and cut

1/8 inch off the top of the sausage. Close the tube and install the nozzle. Nozzles are supplied with the appropriate opening. SWELLSEAL® Gungrade WA must be applied in an uninterrupted band (minimum 3/8) inch wide and thick), gunned in the middle of the joint or prefab element. Concrete cover should be at least 3 inches on both sides, in order to avoid cracks from the pressure of material swelling. If SWELLSEAL® Gungrade WA is to be installed under water or during heavy rain the concrete operation should begin within 2 hours of application to provide confinement for the material or premature swelling may result lowering the effectiveness of the material

STORAGE & HANDLING

Store in dry area for up to 12 months from the date of production at temperatures between 40°F and 85°F for best performance. See shelf life details on the material packaging.

PRECAUTIONS

Always use protective clothing, gloves and goggles consistent with OSHA regulations during use. Avoid eye and skin contact. Do not ingest. Refer to Material Safety Data Sheet for detailed safety precautions.

SAFETY INFORMATION

In the event of an EMERGENCY call: CHEM-TREC 800-424-9300.

WARRANTY INFORMATION

De Neef Construction Chemicals, Inc. products are warranted under the policy set forth under the WARRANTY section of the De Neef Construction Chemicals Inc., product catalog, Warranty information can also be obtained via the De Neef Construction Chemicals Inc. website at www.deneef.com, or by calling 713-896-0123 or toil free at 1-800-732-0166.

Rev. 04/2006



CHEMTREC Transportation Emergency Phone: 800-424-9300

Pittsburgh Poison Control Center

Health Emergency No.: 412-681-6669

NOTE: The CHEMTREC Transportation Emergency Phone is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving. •chemicals

Section 1 - Chemical Product / Company Information

Product Name:

BITUMASTIC 300 M PART A

Revision Date: 03/25/2008

Identification Number:

PLMSDS 0165A5NL

Supercedes: 07/29/2005

Product

Coal Tar Epoxy - FOR INDUSTRIAL

USE ONLY Use/Class:

Preparer:

Regulatory, Department

Manufacturer:

Carboline Company 350 Hanley Industrial Ct. St. Louis, MO 63144

Section 2 - Composition / Information On Ingredients

Chemical Name	CAS Number	Weight % Less Tha	n ACGIH TLV-TW	A ACGIH TLV-STEL	OSHA PEL-TW	<u> AOSHA-CEIL</u>
COAL TAR FIBER PITCH	65996-93-2	35.0	0.2 MGM3	N/E	0.2 MGM3	NE
TALC	14807-96-6	30.0	N/E	N/E	N/E	N/E
POLYAMIDE	68082-29-1	15.0	NE	NE	NE	NE
META-XYLENE	108-38-3	10.0	434 Mg/M3	651 Mg/M3	434 Mg/M3	N/E
PARA-XYLENE	106-42-3	5.0	434 Mg/M3	651 Mg/M3	434 Mg/M3	N/E
ETHYL BENZENE	100-41-4	5.0	100 PPM	125 PPM	435 MGM3	N/E
ORTHO-XYLENE	95-47-6	5.0	434 Mg/M3	651 Mg/M3	434 Mg/M3	N/E
CLAY	TRADE SECRET	5.0	NE	NE	NE	NE
ETHYL ALCOHOL	64-17-5	5.0	1000 PPM	N/E	1900 MGM3	N/E
CLAY	68911-87-5	5.0	NE	NE	NE	NE
TRIS-2,4,6-	90-72-2	5.0	NE	N/E	NE	NE
(DIMETHYLAMINOMETHY)	_):	1		i		
PHENOL						
MICROCRYSTALLINE	14808-60-7	0.4	0.025 MG/M3	N/E	0.1 MG/M3	N/E
SILICA			(respirable)	1	(respirable)	4
TOLUENE	108-88 <u>-3</u>	0.2	20 <u>PPM</u>	N/E	375 MGM3	NE

Section 3 - Hazards Identification

Emergency Overview: FLAMMABLE liquid and vapor. Contains SILICA which can cause cancer. Contains COAL TAR which can cause cancer. Contains AROMATIC DISTILLATE which can cause cancer. Risk of Cancer depends on duration and level of exposure.

Effects Of Overexposure - Eye Contact: Can cause eye burns.

Effects Of Overexposure - Skin Contact: Can cause skin burns. May cause allergic skin reaction.

Effects Of Overexposure - Inhalation: Harmful if inhaled, may affect the brain or nervous system, causing dizziness, headache, or nausea. May cause nose and throat irritation. May cause lung irritation. May cause allergic respiratory reaction, effects may be permanent.

Effects Of Overexposure - Ingestion: Harmful if swallowed.

Effects Of Overexposure - Chronic Hazards: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Crystalline silica is known to cause silicosis. Crystalline silica (Quartz) is classified as a known human carcinogen (Group 1) by IARC. Exposure is by route of inhalation. If material is in a liquid matrix it is unlikely to be inhaled. However, when sanding or grinding the finished product, there may be potential for crystalline silica to become airborne.

Primary Route(s) Of Entry: Skin Contact, Skin Absorption, Inhalation, Ingestion, Eye Contact

Medical Conditions Prone to Aggravation by Exposure: If sensitized to amines, epoxies, or other chemicals do not use. See a physician if a medical condition exists. If you have a condition that could be aggravated by exposure to dust or organic vapors, see a physician prior to use.

Section 4 - First Aid Measures

First Aid - Eye Contact: If material gets into eyes, flush with water immediately for 15 minutes. Consult a physician.

First Aid - Skin Contact: In case of contact, immediately flush skin with plenty of water while removing contaminated clothing and shoes. Launder clothing before reuse. If rash or irritation develops, consult a physician.

First Aid - Inhalation: If inhaled, remove to fresh air. Administer oxygen if necessary. Consult a physician if symptoms persist or exposure was severe.

First Aid - Ingestion: If swallowed do not induce vomiting. Seek immediate medical attention.

Section 5 - Fire Fighting Measures

Flash Point, F: 75F (23C) (Setaflash)

Lower Explosive Limit, %: 0.8 Upper Explosive Limit, %: 7.1

Extinguishing Media: Carbon Dioxide, Dry Chemical, Foam, Water Fog

Unusual Fire And Explosion Hazards: Flammable Liquid. Vapors are heavier than air and will accumulate. Vapors will form explosive concentrations with air. Vapors travel long distances and will flashback. Use mechanical ventilation when necessary to keep percent vapor below the "Lower Explosion Level" (LEL). Eliminate all ignition sources. Keep away from sparks, open flames and heat sources. All electric equipment and installations should be made and grounded in accordance with the National Electrical Code. In areas where explosion hazards exist, workers should be required to use non-ferrous tools and to wear conductive and non-sparking shoes.

Special Firefighting Procedures: Flammable. Cool fire-exposed containers using water spray.

Section 6 - Accidental Release Measures

Steps To Be Taken If Material Is Released Or Spilled: Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking. Evacuate the area of unprotected personnel. Wear appropriate personal protection clothing and equipment. Follow exposure controls/personal protection guidelines in Section 8. Contain and soak up residual with an aborbent (clay or sand). Take up absorbant material and seal tightly for proper disposal. Dispose of in accordance with local, state and federal regulations. Refer to Section 15 for SARA Title III and CERCLA information.

Section 7 - Handling And Storage

Handling: Do not get in eyes, on skin, or on clothing. Keep container tightly closed when not in use. Wear personal protection equipment. Do not breathe vapors. Wash thoroughly after handling. If pouring or transferring materials, ground all containers and tools. Do not weld, heat, cut or drill on full or empty containers. Use only in accordance with Carboline application instructions, container label and Product Data Sheet. Avoid breathing vapors or spray mist.

Storage: Keep away from heat, sparks, open flames and oxidizing agents. Keep containers closed. Store in a cool, dry place with adequate ventilation.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use explosion-proof ventilation when required to keep below health exposure guidelines and Lower Explosion Limit (LEL).

Respiratory Protection: Use only with ventilation to keep levels below exposure guidelines listed in Section 2. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use MSHA/NIOSH approved supplied air respirator. Follow all current OSHA requirements for respirator use. For silica containing coatings in a liquid state, and/or if no exposure limits are established in Section 2 above, supplied air respirators are generally not required.

Skin Protection: Recommend impervious gloves and clothing to avoid skin contact. If material penetrates to skin, change gloves and clothing. The use of protective creams may be beneficial to certain individuals. Protective creams should be applied before exposure.

Eye Protection: Recommend safety glasses with side shields or chemical goggles to avoid eye contact.

Other protective equipment: Eye wash and safety showers should be readily available.

Hygienic Practices: Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet facilities. Use of a hand cleaner is recommended. Launder contaminated clothing before reuse. Leather shoes can absorb and allow hazardous materials to pass through. Check shoes carefully after soaking before reuse.

Section 9 - Physical And Chemical Properties

Boiling Range:

176 F (80 C) - 284 F (140 C)

Vapor Density:

Heavier than Air

Odor:

Tar Odor

Odor Threshold:

Appearance:

Viscous Black or Red Liquid

Evaporation Rate:

Slower Than Ether

Solubility in H2O:

N/D

Specific Gravity:

1.32

Freeze Point: Vapor Pressure: **Physical State:**

N/D N/D Liquid

PH:

N/D

Section 10 - Stability And Reactivity

Conditions To Avoid: Heat, sparks and open flames.

Incompatibility: Keep away from strong oxidizing agents, heat and open flames.

Hazardous Decomposition Products: Carbon monoxide, nitrogen oxides, and unidentified organic compounds. Consider all smoke and fumes from burning material as very hazardous. Welding, cutting or abrasive grinding can create smoke and fumes. Do not breathe any fumes or smoke from these operations.

Hazardous Polymerization: Will not occur under normal conditions.

Stability: This product is stable under normal storage conditions.

Section 11 - Toxicological Information

Product LD50: N/D Product LC50: N/D

Chemical Name	CAS Number	LD50	LC50
COAL TAR FIBER PITCH	65996-93-2	NOT AVAILABLE	NOT AVAILABLE
TALC	14807-96-6	NOT AVAILABLE	NOT AVAILABLE
POLYAMIDE	68082-29-1	>2000 MG/KG ORAL,RAT	NOT AVAILABLE
META-XYLENE	108-38-3	NOT AVAILABLE	NOT AVAILABLE
PARA-XYLENE	106-42-3	NOT AVAILABLE	NOT AVAILABLE
ETHYL BENZENE	100-41-4	3500 MG/KG RAT,ORAL	NOT AVAILABLE
ORTHO-XYLENE	95-47-6	NOT AVAILABLE	NOT AVAILABLE
CLAY	TRADE SECRE	ETNOT AVAILABLE	NOT AVAILABLE
ETHYL ALCOHOL	64-17-5	7060 MG/KG, ORAL, RAT	20000 PPM/10 HRS, RAT, INHALATION
CLAY	68911-87-5	NOT AVAILABLE	NOT AVAILABLE
TRIS-2,4,6-	90-72-2	2169 MG/KG ORAL	NOT AVAILABLE
(DIMETHYLAMINOMETHYL)		•	
PHENOL	:	4	
MICROCRYSTALLINE SILICA	14808-60-7	NOT AVAILABLE	NOT AVAILABLE
TOLUENE	108-88-3	5.0 G/KG RAT ORAL, 14G/KG RABBIT DERN	MAL8000 PPM/4HRS, RAT, INHALATION

Section 12 - Ecological Information

Ecological Information: No data

Section 13 - Disposal Information

Disposal Information: Dispose of in accordance with State, Local, and Federal Environmental regulations. Responsibility for proper waste disposal is with the owner of the waste.

Section 14 - Transportation Information

DOT Proper Shipping

Paint

Packing Group: III

Name:

DOT Technical Name: DOT Hazard Class: N/A

Hazard Subclass:N/A Resp. Guide 128

Page:

DOT UN/NA Number:

UN 1263

Additional Notes: None.

Section 15 - Regulatory Information

CERCLA - SARA HAZARD CATEGORY

This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

IMMEDIATE HEALTH HAZARD, CHRONIC HEALTH HAZARD, FIRE HAZARD

SARA SECTION 313

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS Number
META-XYLENE	108-38-3
PARA-XYLENE	106-42-3
ETHYL BENZENE	100-41-4
ORTHO-XYLENE	95-47-6
TOLUENE	108-88-3

TOXIC SUBSTANCES CONTROL ACT

All components of this product are listed on the TSCA inventory.

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

Chemical Name PARA-XYLENE **CAS Number** 106-42-3

U.S. STATE REGULATIONS AS FOLLOWS:

NEW JERSEY RIGHT-TO-KNOW

The following materials are non-hazardous, but are among the top five components in this product.

Chemical Name IRON OXIDE CAS Number 1332-37-2

PENNSYLVANIA RIGHT-TO-KNOW

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name IRON OXIDE CAS Number 1332-37-2

CALIFORNIA PROPOSITION 65

Warning: The following ingredients present in the product are known to the state of California to cause Cancer:

Chemical Name
ETHYL BENZENE
MICROCRYSTALLINE SILICA

CAS Number 100-41-4 14808-60-7

Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards:

Chemical Name TOLUENE CAS Number 108-88-3

INTERNATIONAL REGULATIONS AS FOLLOWS:

CANADIAN WHMIS

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

CANADIAN WHMIS CLASS: B2 D2A D2B

Section 16 - Other Information

HMIS Ratings

Health: 3

Flammability: 3

Reactivity: 1

Personal Protection: X

VOLATILE ORGANIC COMPOUNDS, GR/LTR MIXED (UNTHINNED): 222

REASON FOR REVISION: Changes made in Section(s): 2, 3, 11, and 15

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations





SWELLSEAL® WA

Sheet Pile Applications Surface Preparation and Installation

Overview:

SWELLSEAL® WA may be used for stopping the ingress of water through sheet piling knuckles in two ways. **SWELLSEAL®** WA can be applied to the female opening of the piles, and allowed to fully cure before driving. This method is useful if the piles are to be pretreated in the contractor yard or plant prior to shipping them to the jobsite. **SWELLSEAL®** WA can also be applied in the field and the sheets drive before the material is cured. This "wet driving" method allows the contractor to drive the sheet immediately after installation of the **SWELLSEAL®** WA.

PREFERRED "WET" METHOD:

Surface preparation and installation (Wet method):

- Lay sheets out with the female side of the pile accessible.
- Clean all foreign material and the surface layer of oxidation from the knuckle by OSHA approved chemical, flame, or abrasive method.
- 3. Immediately before applying sealant, blow the knuckle clean with compressed air.
- 4. Apply an 3/8" bead of SWELLSEAL® WA into the female knuckle. Do not overfill knuckle.
- Drive the sheet pile.

ALTERNATE APPLICATION METHOD:

Surface preparation and installation (Cured method):

- Lay sheets out with the female side of the pile accessible.
- Clean all foreign material and the surface layer of oxidation from the knuckle by OSHA approved chemical, flame, or abrasive method.
- 3. Immediately before applying sealant, solvent wipe the knuckle.
- After the solvent flashes off, apply an 3/8" bead of SWELLSEAL[®] WA into the female knuckle. Do not overfill knuckle.
- Tool the SWELLSEAL[®] WA in the knuckle to roughly the shape of the male interlocking member of the sheet pile.
- Store sheet piles in such a way that they will not get standing water in the knuckle.



PRODUCT NAME SWELLSEAL® Gungrade WA **Gunnable Polyurethane Waterstop**

MANUFACTURER

De Neef Construction Chemicals, Inc. 5610 Brystone Houston, TX 77041 1(800) 732-0166

PRODUCT DESCRIPTION SWELLSEAL Gungrade WA is a single component hydrophilic mastic, designed for sealing smooth to very irregular construction joints and pipe penetrations. SWELLSEAL® Gungrade WA is supplied in cartridge or sausage. Material cures and swells in the presence of moisture or water. Curing Time is dependent on temperature and humidity, i.e. curing time will decrease if temperature and pH are high. SWELLSEAL® Gungrade WA will become firm in 24-36 hours. Performance is not affected by the curing time.

APPROPRIATE APPLICATIONS

- Sealing of rough and smooth construction joints of cast in-place or precast concrete in wet and underwater applications.
- Sealing joints between pre-cast segments in wet or underwater applications (e.g. manholes, box culverts, cable ducts and pipes)
- Sealing of the joints between sheet piles.

ADVANTAGES

- Solvent free
- Due to its special formulation, SWELLSEAL® Gungrade WA can be applied to wet surfaces or in underwater applications.
- SWELLSEAL[®] Gungrade WA adheres to concrete, PVC, HDPE, steel, and fibreglass

Property	Value	Norm
Solids	100%	
Uncured		Q2 00
Viscosity	Gel / Paste	
Density (at 20°C, 68°F)	Approx. 90 lbs/cu.ft.	ASTM D 3574 95
Slump in vertical applications	1/8 inch	
Hand dry (at 68°F and 60% rel. humidity)	10 hr	
Flash Point	> 266 °F	ASTM D 93
Cured (7 days at 25°C (77°F) 1cm Thick)	* *	
Elongation at break	Approx. 625%	ASTM D 3574 95
Tensile strength.	Approx. 312 psi	ASTM D-412
Resistance to hydrostatic pressure	Up to 492 feet of water column	Test DNC
Swelling capacity in contact with water	Swells to approx. 200% of its original dry volume	Test report KUL University

Consumption

The consumption of SWELLSEAL® Gungrade WA per linear foot depends on the quality of the

During application: pasty, Cured: rubbery

Appearance

Color: white

*	Width (of the joint)	Consumption
Cartridges 10.5 oz.	1/4 inch	25 – 35 ft.
	5/16 inch	12 - 15 ft.
	3/8 inch	approx. 10 ft.
Sausages 20 oz. 1/4 inch	1/4 inch	50 – 70 ft.
	5/16 inch	24 - 30 ft.
	3/8 inch	approx. 20 ft.

ADVANTAGES cont.

- In contact with water SWELLSEAL® Gungrade WA will expand to more than 200% of its original cured volume.
- Flexible system, which adapts to the irregular surfaces



SWELLSEAL®

Rev. 04/08

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: SWELLSEAL® WA (Swellseal Gungrade, Swellseal Cartridge, Swellseal Sausage, or Swellseal Bulk.)

MANUFACTURER: de neef Construction Chemicals Inc.

ADDRESS:

5610 Brystone Drive

PHONE:

Houston, TX 77095 (800) 732-0166 (7am-5pm CST Weekdays)

FAX:

(713) 849-3340

WEBSITE:

www.deneef.com

EMERGENCY PHONE: CHEMTREC (800) 424-9300 (Anytime)

Outside US: 1-703-527-3887

SECTION 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

May cause allergic respiratory reaction, Harmful if inhaled, Respiratory sensitizer, Lung damage and respiratory sensitization may be permanent. Causes skin irritation. May cause allergic skin reaction. Skin sensitizer. Causes eye irritation.

POTENTIAL HEALTH EFFECTS

EYES:

Acute Eye: May causes irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor may cause irritation with symptoms of burning and tearing.

Chronic Eye Prolonged vapor contact may cause conjunctivitis.

SKIN:

Acute Skin: May cause irritation with symptoms of reddening, itching, and swelling. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling and rash. Cured material is difficult to remove.

Chronic Skin : Prolonged contact can cause reddening, swelling, rash, and in some cases, skin sensitization.

INGESTION: Causes irritation. Swelling of this product in airway could cause suffocation. Ingestion of this product is harmful and maybe fatal.

INHALATION: Unlikely

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SWELLSEAL® WA

SECTION 3: HAZARDOUS INGREDIENTS

Name CAS NO. % wt/wt

Toluene diisocyanate 26471-62-5 < 0.1 %

SECTION 4: FIRST AID MEASURES

EYES:

Immediately flush eyes gently with water for at least 15 minutes, while holding open upper and lower lids. Immediately seek medical attention.

SKIN:

Remove contaminated clothing. Blot or brush the product away, prior to washing the exposed area with water. For sever exposures, to liquid product immediately get under safety shower and begin rinsing. Get medical attention if irritation develops. The cured product on the skin is rarely a cause of irritation (If it does, seek medical attention). The process of trying to remove the cured product may cause irritation.

INGESTION:

Do Not Induce Vomiting. Rinse mouth out with water. Aspiration of material into the lungs due to vomiting can cause chemical pneumonitis, which can be fatal.

INHALATION:

Unlikely route. Asthmatic symptoms may develop and may be immediate or delayed up to several hours. Extreme asthmatic reactions can be life threatening.

SECTION 5: FIRE-FIGHTING MEASURES

FLASH POINT: > 130°C (>266°F) AUTO-IGNITION TEMEPRATURE: >450°C

EXTINGUISHING MEDIA:

Dry Chemical, CO₂, Foam or Water Fog

SPECIAL FIRE FIGHTING PROCEDURES:

Do not scatter material with high pressure water streams. Firefighters should wear NFPA compliant firefighting protective equipment, including self-contained breathing apparatus. During a fire, isocyanate vapors and other irritating and/or toxic gases may be generated.

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SWELLSEAL® WA

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HAZARDOUS DECOMPOSITION PRODUCTS:

Fire or intense heat will decompose the product into CO₂, CO, Hydrogen Cyanide, Oxides of Nitrogen, Isocyanates, Isocyanic Acid, and dense black smoke.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES:

Personal precautions: Ensure adequate ventilation if working in confined spaces. Avoid contact with eyes and wear protective clothing. Caution: spillages may be slippery.

Environmental precautions: Prevent material from entering sewage system, water courses or water treatment installations.

CLEAN-UP PROCEDURES:

V.D. and San State of the Control of

Spread sand or industrial absorbent over spillage and transfer into labeled containers for disposal. See section 13 for disposal considerations. Spilled material will polymerize under atmospheric moisture.

SECTION 7: HANDLING AND STORAGE

HANDLING: Never spray the product; do not drink, eat or smoke during handling.

STORAGE: Keep containers dry and closed. Store in original containers. Storage temperature 5 - 25 °C (41°F-77°F)

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Normal conditions of ventilation are usually adequate. Wear a fine particle mask or respirator, or use local exhaust ventilation as necessary when using in confined areas with inadequate ventilation.

HAND PROTECTION: Use protective gloves. Suitable types are pvc or neoprene. If in doubt seek advice from a reputable manufacturer. Barrier creams help to protect exposed areas but are no substitute for full physical protection. They should not be applied once exposure has occurred.

SKIN PROTECTION: Cotton or cotton/synthetic overalls or coveralls are normally suitable. Grossly contaminated clothing should be removed and the skin washed with soap and water.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Gray paste ODOR: Sweet

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ODOR THRESHOLD: Not available

MELTING/ FREEZING PT: Not available

PHYSICAL STATE: Paste

FLASH POINT: > 130° C (266°F)

pH: Not applicable

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (continued)

EVAPORATION RATE: Not available RELATIVE DENSITY: 1.5g/cm³

FLAMMABILITY: Not available SOLUBILITY (H₂O): Not soluble

UPPER FLAMMABILITY LIMITS: Not available PARTITION COEFFICIENT: Not available

LOWER FLAMMABILITY LIMITS: Not available AUTO-IGNITION TEMPERATURE: >450°C

VAPOR PRESSURE: Not available VISCOSITY: Not available

VAPOR DENSITY: Not available VOC CONTENT % WT: None

DECOMPOSITION TEMPERATURE: Not available

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable under normal ambient conditions.

CONDITIONS TO AVOID (STABILITY): Moisture and /or heat may cause polymerization.

INCOMPATIBILITY (MATERIAL TO AVOID): Water, amines and alcohols

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: None at ambient conditions

HAZARDOUS POLYMERIZATION: Will not occur at ambient conditions.

SECTION 11: TOXICOLOGICAL INFORMATION

No information on the product itself is available.

SECTION 12: ECOLOGICAL INFORMATION

No information on the product itself is available.

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SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method

Waste disposal should be in accordance with existing federal, state and local environmental control laws. Incineration is the preferred method.

Empty Container Precautions

Empty containers retain product residue, observe all precautions for product. Do not heat or cut empty container with electric or gas torch because highly toxic vapors and gases are formed. Do not reuse without thorough commercial cleaning and reconditioning. If container is to be disposed, ensure all product residues are reacted or removed prior to disposal. Dispose of per local, state and federal guidelines. This product in its cured state is inert and non-toxic.

SECTION 14: TRANSPORT INFORMATION

Not considered as dangerous goods under transport regulations.

SECTION 15: REGULATORY INFORMATION

No classification required.

HMIS:

Health:1

Flammability:0

Reacticity:0

SECTION 16: OTHER INFORMATION

PREPARATION INFORMATION:

April, 2008

This MSDS is on a three year review cycle. If the date on this sheet is older than three years please contact *de neef* Construction Chemicals Inc. for an updated MSDS.

DISCLAIMER:

All information appearing herein is based on manufacturer and/ or recognized technical sources. While the information is believed accurate *de neef* Construction Chemicals Inc. makes no representations as to the accuracy or sufficiency of the information.

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Handling Hole Closure Addendum

In order to close the handling holes, Sevenson has devised a cost effective alternate to welding a patch over the hole. Sevenson will use two 5" square steel plates with a center-drilled hole, a stainless steel bolt, nut, and washers, and rubber gaskets to complete the closure. A watertight closure is necessary. The 5" steel plates will be made of A36 grade structural steel and the bolts will be stainless steel. The patches will be installed after the sheets are driven to their final elevation. The handling holes will be exposed with shallow excavations as necessary.

Material List is as follows:

- 1. 5" x 5" Grade A36 Steel plate 1/4" thick with hole in center of plate.
- 2. 5" x 5" Neoprene Rubber 1/8" thick with 3/8" hole in center. (Cut sheet attached)
- 3. Stainless Steel Type 304 1/2" bolts with stainless steel washers.

STYLE 1119 - NEOPRENE

MATERIAL CHLOROPRENE

COLOR BLACK

HARDNESS 50 - 60 - 70 - 80 SHORE - A +/-5

TENSILE 1200 PSI

ELONGATION 300%

TEMPERATURE -20° F to $+200^{\circ}$ F

FINISH SMOOTH

COMPRESSION SET 70 HOURS

ASTM METHOD 212° F (100° C)

B 25% DEFLECTION 35%

VOLUME CHANGE AFTER

IMMERSION IN:

ASTM #1 OIL FOR 70 HOURS

@ 212° F -4% to +3%

ASTM #3 OIL FOR 70 HOURS

@ 2120 F +60% to 90%

THICKNESSES AVAILABLE 1/64" to 4"

MEETS SPECIFICATIONS ASTM - D - 2000 - 86E

SAE - J - 200 MIL - D - 2065

MIL - R - 3065

RECOMMENDED USES - WIDE VARIETY OF OILS AND SOLVENTS BUT NOT WITH CHLORINATED, AROMATIC AND KETONE TYPES; POPULAR FLANGE GASKET APPLICATIONS.

VERTICAL BARRIER WALL INSTALLATION PLAN Utility Crossing Addendum

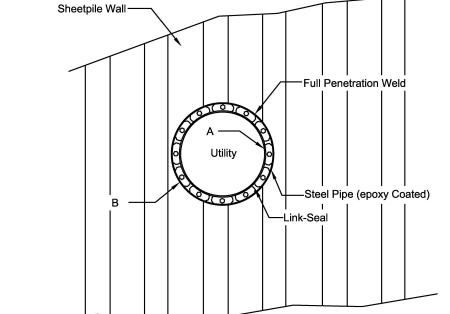
In order to install the necessary utilities to the Wolf Warehouse without compromising the permeability of the Vertical Barrier Wall (VBW), Sevenson in proposing the implement the procedure described in this addendum. This procedure will apply to all utility crossings of varying sizes, specifically the 6" and 2" diameter water services, the 4" sanitary sewer service and the 1½" gas service.

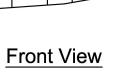
Sevenson will begin by excavating on either side of the VBW in the location of the utility crossing to an elevation that provides adequate working space below the crossing. A hole will be cut into the VBW at the proper elevation only slightly bigger that the size of the steel pipe needed for the specific utility being installed (see material list for more detail on pipe size). A steel pipe will be installed in the hole and welded into place with a full-penetration weld around its circumference at the pipe/VBW interface. The pipe will be long enough to provide a parallel (90-degree) crossing considering the flange angles in the sheet piles of the VBW. At this time, Sevenson will work directly with Parsons and the utility companies to install the utilities.

Once the utilities are in place, Sevenson will use a Link-Seal® Modular Seal system around the utility pipe, inside the crossing pipe, to seal off and secure the utility. Please see the attached detail showing a front and cross-section view of the utility crossing for more detail. The Link-Seal® Modular Seal system will be installed as per the manufacturer's recommendations. Additional information about the Link-Seal® Modular Seal system is also attached to this addendum. Sevenson will submit the manufacturer's recommended Link-Seal® Modular Seal system sizes and configurations for each utility after they are acquired. The last step will be to repair any damages to the coating using the approved epoxy coating cause by this effort.

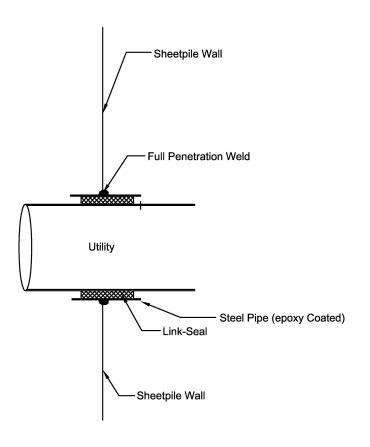
Material list is as follows:

- 1. 12" long pieces of grade A36 steel pipe ½" thick of varying diameters (8" pipe for 6" utility, 6" pipe for 4" utility, 4" pipe for 2" utility and 3½" pipe for ½" utility).
- 2. Manufacturer's recommended Link-Seal® Modular Seal appropriately sized to each utility crossing with the stainless steel bolt configuration.
- 3. Epoxy coating, as previously submitted, to perform repairs on the VBW coating.





		Α	В
L	Jtility	Utility Line Dia.	Pass Trough Dia.
V	Nater	6"	8"
V	Nater	2"	4"
S	Sewer	4"	6"
	Gas	1-1/2"	3-1/2"



Section View

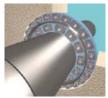
Pi	pe Penetration	
Ventron/Velsico Superfund Site Developed Are: Wood-Ridge/Carlstadt, N	OU-1 a Remedial Constru	ction
	NSON ONMENTAL CES, INC.	
DRAWING	DATE:	7/12/2010
	DRAWN BY:	C. Bigelow
	CHECKED BY:	











Description
Benefits/Features
Typical Applications
Seal and Hardware Options
Specifications
Warranty
How to Order
Installation

DESCRIPTION

Link-Seal® modular seals are considered to be the premier method for permanently sealing pipes of any size passing through walls, floors and ceilings. In fact, any cylindrical object may be quickly, easily and permanently sealed, as they pass through barriers, by the patented Link-Seal® modular seal design.

Ductile iron, concrete, metal as well as plastic pipes may be hydrostatically sealed within walls to hold up to 20 psig (40 feet of static head). Electrical or telecommunications cable may be sealed within conduit as they enter vaults or manholes. The annular space between carrier pipes passing through casings may be sealed against the entry of water, soil or backfill material.

With a wide variety of hardware/ elastomer combinations, Link-Seal modular seals are easily configured to achieve the best possible match for service conditions encountered. High temperature seals, fire seals (Factory Mutual Approved) and oil resistant seals may be ordered to meet special or unique service applications. For the system approach, metal or non-conductive Century-Line® sleeves with water stops may be ordered with Link-Seal modular seals to ensure correct positioning and a water tight seal of the installation within poured concrete walls.

Link-Seal modular seals are also available for a wide variety of special applications, temperature extremes, exotic chemical combinations and for "out of round" or non-centered applications. Please contact factory for your special application.



BENEFITS/FEATURES

Saves time and money...

 Link-Seal modular seals install in up to 75% less time compared to lead-oakum joints, hand fitted flashings, mastics or casing boots.

Positive hydrostatic seal...

 Link-Seal modular seals are rated at 20 psig (40 feet of head), which exceeds the performance requirements of most applications.

Long seal life...

 Link-Seal modular seals are designed for use as a permanent seal. Seal elements are specially compounded to resist aging and attack from ozone, sunlight, water and a wide range of chemicals.

Maximum protection against corrosion...

• Standard fasteners have a two-part zinc dichromate and proprietary corrosion inhibiting coating.

Certification/Approvals...

- Factory Mutual Fire Approvals.
- Also a wide variety of approvals from various Federal agencies, associations, code groups, laboratories and organizations.

ISO Quality Assurance...

 Link-Seal modular seals are manufactured in an ISO 9001:2000 certified facility.

Configure a Link-Seal modular seal to match your application...

 16 sizes, color coded EPDM, Nitrile, & Silicone elastomers may be used with various hardware options to match performance characteristics with service conditions.



 Corrosion resistant 316 stainless steel available for maximum corrosion protection.

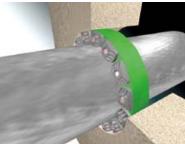
TYPICAL APPLICATIONS

Century-Line® Model CS Sleeves in Combinantion with "low durometer" EPDM (blue) Link-Seal® Modular Seals



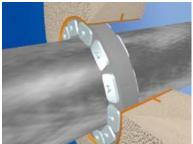
Century-Line® Model CS Sleeves are ideal for poured wall construction. Made of HDPE thermoplastic, they are lightweight and easy to handle. Molded-in waterstop and reinforcing ribs serve to anchor the sleeve in the wall and resist pour forces. Nailer end caps are provided to make placement in forms simple and accurate. Sleeves are available in 16 diameters, up to 25", and any length. In the event of a field change they can be shortened with ordinary hand tools.

Pre-cast or Cored Wall Openings in Combination with Nitrile (green) Link-Seal® Modular Seals



Link-Seal® Modular Seals are also commonly installed in cored wall openings or pre-cast openings such as those formed by use of Cell-Cast® Disks for pipe penetration hole forms. See Cell-Cast Disk (page 4) or contact PSI for more information.

Model WS Steel Sleeves in Combination with Silicone (grey) Link-Seal® Modular Seals



Model WS Steel Sleeves are made from heavy-wall welded or seamless pipe. A full circle waterstop plate acts as positive water seal and anchor to prevent thrust movement. The 2" collar (water-stop) is continuously welded on both sides. Model WS is available in a wide range of diameters and any length. Sleeves are protected by a coating of red primer. Hot dip galvanizing is available on request.

Typical Applications

- Mechanical Contractors Interior Piping Systems
- Floor Sleeves
- Wall Sleeves
- Manhole Pipe Entry Seals
- Waste Treatment Plants
- Cased Road Crossings
- Elevator Shafts
- Power Generating Dams
- Thermal Storage Systems
- Fire Protection Wall Penetrations
- Cased Railroad Crossings
- Electrical Isolation of Pipes
- Precast Concrete Pipe Seals
- Insulated Pipe Seals
- Dual Containment Seals
- Marine Applications
- Noise Dampening

- Flexible Sign & Pole Supports
- Electrical Isolation of Pipe Supports for Corrosion Protection
- Mining
- Pulp & Paper
- Decorative Fountains
- Bank Tube Transfer Systems
- Pool Contractors
- Electrical Contractors
- Marine Applications
- Waste & Water Treatment
- Telecommunications
- Railway Crossings
- Valve Pits
- Refrigeration Buildings
- Overhead Signs
- Guard Post Assemblies
- Power Generation Dams
- Offshore Oil Rigs
- High Pressure Tank Guards
- Underground Steel Tanks
- Centuryline Applications

- Precast Concrete Manufacturers
- Perimeter Berm Installations Around Tank Farms
- Flow Restrictors in Sewer Maintenance
- Fluid Overflow Devices
- Noise and Sway Dampener
- Through Deck Fire Breaks
- Parking Garage Column Protectors
- Cable TV Installations
- Bridge Construction
- Septic Tank Installations
- Coal Preparation PlantsPile Driving Operations
- Flag Pole Installations
- Driving Contractors
- Tunneling Operations



LINK-SEAL® MODULAR SEAL AND HARDWARE OPTIONS



Model "C" or "L" Link-Seal Modular Seal

Suitable for use in water, direct
ground burial and atmospheric
conditions. Provides electrical
insulation where cathodic protection

Type: Standard

Seal Element: EPDM (Black), EPDM (Blue)

Pressure Plates: Composite

Bolts & Nuts: Steel with 2-part Zinc

Go To Ordering

is required.

Color: Black or Blue

Dichromate & Proprietary Corrosion Inhibiting

Coating

Temp. Range: -40 to +250F. (-40 to +121C.)*

* = Sustained operation near temperature limits may affect life expectancy.



Go To Ordering

Model "S-316" Link-Seal Modular Seal

For chemical processing waste water treatment. EPDM rubber is resistant to most inorganic acids and alkalis, some organic chemicals (acetone, alcohol, ketones).

Color: Black or Blue

Type: Stainless

Seal Element: EPDM (Black), EPDM (Blue)

Pressure Plates: Composite
Bolts & Nuts: 316 Stainless Steel

Temp. Range: -40 to +250F. (-40 to +121C.)*
* = Sustained operation near temperature limits may affect life expectancy.



Go To Ordering

Model "O" Link-Seal Modular Seal

Nitrile rubber is resistant to oils, fuel and many solvents (gasoline, motor oil, kerosene, methane, jet fuel, hydraulic fluid, water, etc.).

Color: Green

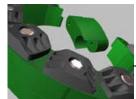
Type: Oil Resistant

Seal Element: Nitrile (Green)
Pressure Plates: Composite
Bolts & Nuts: Steel with 2-part Zinc

Dichromate & Proprietary Corrosion Inhibiting

Coating

Temp. Range: -40 to +210F. (-40 to +99C.)*
* = Sustained operation near temperature limits may affect life expectancy.



Go To Ordering

Model "OS-316" Link-Seal Modular Seal

Combination of oil-resistant rubber and stainless steel hardware.

Color: Green

Type: Oil Resistant
Seal Element: Nitrile (Green)

Pressure Plates: Composite
Bolts & Nuts: 316 Stainless Steel

Temp. Range: -40 to +210F. (-40 to +99C.)*
* = Sustained operation near temperature limits may affect life expectancy.



Go To Ordering

Model "T" Link-Seal Modular Seal

Silicone rubber is ideal for temperature extremes. "T" model is

Factory Mutual approved.

Color: Grey

Type: High/Low Temperature **Seal Element:** Silicone (Grey)

Pressure Plates: Steel Zinc Dichromate
Bolts & Nuts: Steel with 2-part Zinc

Dichromate & Proprietary Corrosion Inhibiting

Coating

Temp. Range: -67 to +400F. (-55 to +204C.)*

* = Sustained operation near temperature limits may affect life expectancy.



Go To Ordering

Model "FD/FS" Link-Seal Modular Seal

Double seal for added protection.

Color: Grey

Type: Fire Seals

Seal Element: Silicone (Grey)

Pressure Plates: Steel Zinc Dichromate
Bolts & Nuts: Steel with 2-part Zinc

Dichromate & Proprietary Corrosion Inhibiting

Coating

Temp. Range: -67 to +400F. (-55 to +204C.)*

* = Sustained operation near temperature limits may affect life expectancy.



SPECIFICATIONS

Material Properties of Link-Seal Modular Seal Elements					
PROPERTY ASTM METHOD		EPDM (EPDM L)	NITRILE	SILICONE	
Hardness (shore A)	D-2240	50 ±5 (40 ±5)	50 ±5	50 ±5	
Tensile	D-412	1450 psi	1300 psi	860 psi	
Elongation	D-412	400%	300%	250%	
Compression Set	S-395	15% 22 hrs. @ 158ºF (70ºC)	45% 22 hrs. @ 212ºF (100ºC)	40% 22 hrs. @ 350ºF (177ºC)	
Specific Gravity	D-297	1.10	1.15	1.40	

Material Properties of Composite Pressure Plates			
PROPERTY	ASTM METHOD	VALUE	
Izod Impact - Notched	D-256	2.05 ft-lb/in	
Tensile Strength @ Yield	D-638	20,000 psi	
Tensile Strength - Break	D-638	20,250 psi	
Flexural Strength @ Yield	D-790	30,750 psi	
Flexural Modulus	D-790	1,124,000 psi	
Elongation, Break	D-638	11.07%	
Specific Gravity	D-792	1.38	
Moisture Content		0.18%	



Bolt & Nut Specifications			
Standard: Carbon Steel	Carbon steel, zinc dichromated per ASTM B633 with an additional corrosion inhibiting proprietary organic coating. (passes 1470 hour salt spray test) Tensile Strength = 60,000 psi, minimum.		
Option: Stainless Steel	ANSI Type = 316, Per ASTM F593-95 Tensile Strength = 85,000 psi, average.		

Modular/Mechanical Seal and Sleeve Specification

Typical Specification

1.0 Penetration Seals

Use a modular, mechanical seal, consisting of rubber links shaped to continuously fill the annular space between the pipe and the wall opening. Link-Seal® pressure plates shall be molded of glass reinforced nylon. Hardware shall be mild steel with a 60,000 psi minimum tensile strength and 2-part Zinc Dichromate coating per ASTM B-633 and Organic Coating, tested in accordance with ASTM B-117 to pass a 1,500-hour

2.0 Sleeves and Wall Openings

A. For diameters up to 24.81" install molded non-metallic high density polyethylene sleeves (HDPE) with integral hollow, molded water-stop ring four inches larger than the outside diameter of the sleeve itself. End caps and reinforcing ribs, domestically manufactured in an approved ISO-9001:2000 facility. Century-Line® Sleeve as manufactured by Pipeline Seal & Insulator, Inc, Houston, TX., or engineered pre-

salt spray test (or 316 Stainless Steel). Coloration shall be throughout elastomer for positive field inspection. Each link shall have permanent identification of the size and manufacturer's name molded into the pressure plate and sealing element. The Contractor will submit to verify the modular seals are domestically manufactured at a plant with a current ISO-9001:2000 registration. Copy of ISO-9001:2000 registrations shall be a submittal item. PSI-Thunderline/ Link-Seal® Modular Seal as manufactured by Pipeline Seal & Insulator, Inc, Houston, TX, or pre-approved equal.

approved equal.

B. For openings from 29.25" to 64.74" in diameter, use a modular hole-forming system consisting of interlocking HDPE plastic discs, domestically manufactured in an ISO-9001:2000 facility. The system shall provide a round hole in conformance with Link Seal® Modular Seal sizing data. Cell-Cast® Hole Forming Discs as manufactured by Pipeline Seal & Insulator, Inc, Houston, TX, or engineer pre-approved equal.

Consideration of brands other than mentioned above shall be submitted to the Engineer for evaluation at least 10 days prior to bid due date and shall include evidence of a minimum of 25 years of successful inservice application of the mechanical seal, as well as current ISO-9001:2000 registration.



WARRANTY

All products are warranted against failure caused by manufacturing defects for a period of one year. Any product found to be so defective and returned within one year from date of shipment will be replaced without charge. The above warranty is made in lieu of, and we disclaim, any and all other warranties,

expressed or implied, including the warranties of merchantability and fitness for a particular purpose, and buyer agrees to accept the products without any such warranties. We hereby disclaim any obligation or liability for consequential damages, labor costs or any other claims or liabilities of any kind whatsoever.



HOW TO ORDER

The best way to quickly and easily size Link-Seal® Modular Seals is to use the on-line Seal-Finder™ program. Just click on the adjacent logo and you'll find how easy it is to size both Link-Seal® Modular Seals and Century-Line® Sleeves.



Click here for more detailed ordering instructions included in our 12 page selection guide.





Click here for even more detailed ordering instructions included in our 32 page engineering manual.

Click here for sizing charts when using Link-Seal® Modular

Click here for sizing charts when using Link-Seal® Modular

Click here for sizing charts when using Link-Seal® Modular



Seals specifically with Century-Line® Sleeves.



Seals specifically with WS Steel Sleeves.



Seals specifically with Cast or Core Bit Drilled Holes.



INSTALLATION INSTRUCTIONS



Click here for complete step-bystep instructions with photographs detailing how to install the Link-Seal® Modular Seal.



Click here for complete step-bystep instructions with photographs detailing how to install Century-Line® Sleeves.



Click here for complete step-bystep instructions with photographs detailing how to install Cell-Cast® Disks.





Pipeline Seal and Insulator, Inc.

6525 Goforth Street, Houston, TX 77021 U.S.A.
Telephone: 713-747-6948 • Toll Free: 800-423-2410
Fax: 713-747-6948 • info@psipsi.com

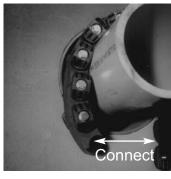
Installation Techniques - Link-Seal® Modular Seals Visit www.linkseal.com

Online Installation Video





1. Center the pipe, cable or conduit in wall opening or casing. Make sure the pipe will be adequately supported on both ends. Link-Seal® modular seals are not intended to support the weight of the pipe.



2. Loosen rear pressure plate with nut just enough so links move freely. Connect both ends of belt around the pipe.



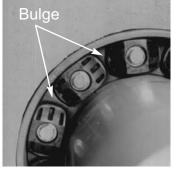
3. Check to be sure all bolt heads are facing the installer. Extra slack or sag is normal. Do not remove links if extra slack exists. Note: On smaller diameter pipe, links may need to be stretched.



4. Slide belt assembly into annular space. For larger size belts, start inserting Link-Seal modular seal assembly at the 6 O'Clock position and work both sides up toward the 12 O'Clock position in the annular space.



5. Using a hand socket or offset wrench ONLY, start at 12 O' Clock. Do not tighten any bolt more than 4 turns at a time. Continue in a clockwise manner until links have been uniformly compressed. (Approx. 2 or 3 rotations)



6. Make 2 or 3 more passes at 4 turns per bolt MAXIMUM, tightening all bolts clockwise until all sealing elements "bulge" around all pressure plates. On type 316 stainless steel bolts, hand tighten ONLY without power tool.



7. If the seal doesn't appear to be correct using the instructions provided, Call PSI at 800-423-2410.

Installation Notes: The Link-Seal® modular seal bolt heads are usually recessed below the wall opening or the edge of casing pipe and therefore a socket or offset wrench must be used. Hand Tools: Use 5/16" hex or #6 screwdriver for LS-200. 1/2" hex requires 3/8" drive socket wrench. 9/16" and 3/4" hex requires 1/2" drive socket wrench. (Tools not provided.)

Always Wear Safety Equipment When Installing Link-Seal® modular seals!

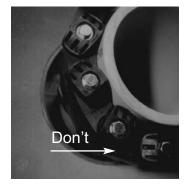
Always Wear Safety Equipment When Using Link-Seal® Modular Seals!



Link-Seal® Modular Seal - Do's

- 1. Make sure pipe is centered.
- 2. Install the belt with the pressure plates evenly spaced.
- 3. Install the exact number of links indicated in sizing charts.
- 4. Check to make sure pipe is supported properly during backfill operations. Note: Link-Seal modular seals are not intended to support the weight of the pipe.
- 5. Make sure seal assembly and pipe surfaces are free from dirt. 6. For tight fits, use non-polluting liquid detergent to assist

installation.



Link-Seal® Modular Seal - Don'ts

- 1. Don't Install the belt with the pressure plates aimed in irregular directions. (Staggered)
- 2. Don't Install Link-Seal® modular seals where weld-beads or other irregular surfaces exist without consideration of the sealing require-
- 3. Don't torque each bolt completely before moving on to the next.
- 4. Don't use high speed power tools (450 rpm or more)
- 5. Do not use power tools on Link-Seal modular seal 316 stainless steel bolts.
- 6. Don't use grease installing Link-Seal modular seals.

SDR-35	Gravity	Sewer	Pipe
---------------	---------	-------	------

PIPE SIZE (Nom.)	ACTUAL O.D. (Inches)	MODEL NUMBER	LINK-SEAL® SIZE	LINKS PER SEAL
4	4.22	WS-6-28-S-*	LS-315-***	10
6	6.28	WS-8-32-S-*	LS-315-***	15
8	8.40	WS-10-36-S-*	LS-315-***	19
10	10.50	WS-14-37-S-*	LS-360-***	17
12	12.50	WS-16-37-S-*	LS-360-***	20
15	15.30	WS-20-37-S-*	LS-575-***	17
18	18.70	WS-22-37-S-*	LS-360-***	29
21	22.05	WS-26-37-S-*	LS-475-***	28
24	24.80	WS-28-37-S-*	LS-425-***	22
27	27.95	WS-32-37-S-*	LS-400-***	25
30	32.00	WS-36-37-S-*	LS-400-***	29

Steel and Plastic Pipe with Same Outside Diameter (IPS) PIPE ACTUAL SIZE ACTUAL SIZE ACTUAL SIZE ACTUAL

WS Steel Sleeves

SIZE (Nom.)	O.D. (Inches)	MODEL NUMBER	LINK-SEAL® SIZE	LINKS PER SEAL
1/2	0.840	WS-2-15-S-*	LS-275-***	5
3/4	1.050	WS-2-1/2-20-S-*	LS-275-***	6
1	1.315	WS-2-1/2-20-S-*	LS-200-***	5
1-1/4	1.660	WS-3-21-S-*	LS-275-***	8
1-1/2	1.900	WS-3-21-S-*	LS-200-***	7
_ 2	2.375	WS-3-1/2-22-S-*	LS-200-***	8
2-1/2	2.875	WS-4-23-S-*	LS-200-***	9
_ 3	3.500	WS-6-28-S-*	LS-360-***	7
3-1/2	4.000	WS-6-28-S-*	LS-340-***	9
_ 4	4.500	WS-6-28-S-*	LS-300-***	10
5	5.563	WS-8-32-S-*	LS-340-***	13
_ 6	6.625	WS-10-36-S-*	LS-475-***	10
8	8.625	WS-12-37-S-*	LS-475-***	12
_10	10.750	WS-14-37-S-*	LS-425-***	10
12	12.750	WS-16-37-S-*	LS-425-***	12
_14	14.000	WS-18-37-S-*	LS-475-***	18
16	16.000	WS-20-37-S-*	LS-475-***	21
_18	18.000	WS-22-37-S-*	LS-475-***	23
20	20.000	WS-24-37-S-*	LS-475-***	25
22	22.000	WS-26-37-S-*	LS-475-***	28
24	24.000	WS-28-37-S-*	LS-475-***	30
26	26.000	WS-30-37-S-*	LS-400-***	23
28	28.000	WS-32-37-S-*	LS-400-***	25
30	30.000	WS-34-37-S-*	LS-400-***	27
32	32.000	WS-36-37-S-*	LS-400-***	29
34	34.000	WS-40-37-S-*	LS-500-***	29
36	36.000	WS-42-37-S-*	LS-500-***	31
42	42.000	WS-48-37-S-*	LS-500-***	36
48	48.000	WS-53-37-S-*	LS-525-***	40

Ductile Iron Pipe (DIPS, AWWA-C900, AWWA-C905, PVC Water Pipe)

	Avvia-0505, i vo viatei i ipej				
PIPE SIZE (Nom.)	ACTUAL O.D. (Inches)	MODEL NUMBER	LINK-SEAL® SIZE	LINKS PER SEAL	
2	2.500	WS-3-1/2-22-S-*	LS-200-***	8	
2-1/4	2.750	WS-4-23-S-*	LS-200-***	9	
3	3.960	WS-6-28-S-*	LS-340-***	9	
4	4.800	WS-8-32-S-*	LS-410-***	7	
6	6.900	WS-10-36-S-*	LS-410-***	10	
8	9.050	WS-12-37-S-*	LS-400-***	9	
10	11.100	WS-14-37-S-*	LS-340-***	24	
12	13.200	WS-18-37-S-*	LS-475-***	18	
14	15.300	WS-20-37-S-*	LS-575-***	17	
16	17.400	WS-22-37-S-*	LS-475-***	23	
18	19.500	WS-24-37-S-*	LS-575-***	21	
20	21.600	WS-26-37-S-*	LS-475-***	27	
24	25.800	WS-30-37-S-*	LS-400-***	23	
30	32.000	WS-36-37-S-*	LS-400-***	29	
36	38.300	WS-44-1/2-37-S-	-*LS-500-***	33	
42	44.500	WS-50-37-S-*	LS-500-***	38	
48	50.800	WS-57-37-S-*	LS-500-***	43	

Copper Tubing

PIPE SIZE) (Nom.)	ACTUAL O.D. (Inches)	MODEL NUMBER	LINK-SEAL® SIZE	LINKS PER SEAL
1/2	0.625	WS-2-15-S-*	LS-275-***	5
3/4	0.875	WS-2-1/2-20-S-*	LS-275-***	6
1	1.125	WS-2-1/2-20-S-*	LS-275-***	6
1-1/4	1.375	WS-2-1/2-20-S-*	LS-200-***	5
1-1/2	1.625	WS-3-21-S-*	LS-275-***	7
2	2.125	WS-3-1/2-22-S-*	LS-275-***	10
2-1/2	2.625	WS-4-23-S-*	LS-275-***	11
3	3.125	WS-5-25-S-*	LS-315-***	8
4	4.125	WS-6-28-S-*	LS-315-***	10
6	6.125	WS-8-32-S-*	LS-315-***	15
8	8.125	WS-10-36-S-*	LS-315-***	19
10	10.125	WS-14-37-S-*	LS-410-***	14
12	12.125	WS-16-37-S-*	LS-410-***	16

NOTES:

using Link-Seal® modular seals. Please contact factory for sizes not listed and for CS model plastic sleeves for walls less than 8"

12 13

^{** =} Specify sleeve length in inches

*** = Specify LS Model C, S-316, L...etc when ordering
(Example LS-475-C-17).

Technically there is no limit to the pipe size that can be sealed

|--|

PIPE SIZE (Nom.)	ACTUAL O.D. (Inches)	MODEL NUMBER	LINK-SEAL® SIZE	LINKS PER SEAL
2	2.380	WS-3-1/2-22-S-*	LS-200-***	8
3	3.500	WS-6-28-S-*	LS-360-***	7
4	4.500	WS-6-28-S-*	LS-300-***	10
5	5.500	WS-8-32-S-*	LS-340-***	13
6	6.500	WS-10-36-S-*	LS-475-***	10
8	8.620	WS-12-37-S-*	LS-475-***	12
10	10.750	WS-14-37-S-*	LS-425-***	10
12	12.750	WS-16-37-S-*	LS-425-***	12
15	15.880	WS-20-37-S-*	LS-475-***	20

Cast Iron Soil Pipe (Service Weight)

PIPE SIZE (Nom.)	ACTUAL O.D. (Inches)	MODEL NUMBER	LINK-SEAL® SIZE	LINKS PER SEAL
2	2.300	WS-4-23-S-*	LS-315-***	6
3	3.300	WS-6-28-S-*	LS-360-***	7
4	4.300	WS-6-28-S-*	LS-315-***	10
5	5.300	WS-8-32-S-*	LS-360-***	9
6	6.300	WS-8-32-S-*	LS-315-***	15
8	8.380	WS-10-36-S-*	LS-315-***	19
10	10.500	WS-14-37-S-*	LS-360-***	17
12	12.500	WS-16-37-S-*	LS-360-***	20
15	15.620	WS-20-37-S-*	LS-475-***	20

Electrical Metallic Tubing (EMT) Thin Wall

WS Steel Sleeves

CONDUIT SIZE (Nom.)	ACTUAL O.D. (Inches)	MODEL NUMBER	LINK-SEAL® SIZE	LINKS PER SEAL
1/2	0.706	WS-2-15-S-*	LS-275-***	5
3/4	0.922	WS-2-1/2-20-S-*	LS-275-***	6
1	1.163	WS-2-1/2-20-S-*	LS-275-***	6
1-1/4	1.510	WS-3-21-S-*	LS-275-***	6
1-1/2	1.740	WS-3-21-S-*	LS-275-***	8
2	2.197	WS-3-1/2-22-S-*	LS-275-***	10
2-1/2	2.875	WS-4-23-S-*	LS-200-***	9
_ 3	3.500	WS-6-28-S-*	LS-360-***	7
4	4.500	WS-6-28-S-*	LS-300-***	10

Intermediate Metal Conduit (IMC)

CONDUIT SIZE (Nom.)	ACTUAL O.D. (Inches)	MODEL NUMBER	LINK-SEAL® SIZE	LINKS PER SEAL
1/2	0.815	WS-2-15-S-*	LS-275-***	5
3/4	1.029	WS-2-1/2-20-S-*	LS-275-***	6
1	1.290	WS-2-1/2-20-S-*	LS-200-***	5
1-1/4	1.638	WS-3-21-S-*	LS-275-***	8
1-1/2	1.883	WS-3-21-S-*	LS-200-***	7
2	2.360	WS-3-1/2-22-S-*	LS-200-***	8
2-1/2	2.857	WS-4-23-S-*	LS-200-***	9
3	3.476	WS-6-28-S-*	LS-360-***	7
3-1/2	3.970	WS-6-28-S*	LS-340-***	9
4	4.466	WS-6-28-S-*	LS-300-***	10

Rigid (RSC), Aluminum (ASC), Galvanized (GSC), Non-Metallic Conduit (NRC)

CONDUIT SIZE (Nom.)	ACTUAL O.D. (Inches)	MODEL NUMBER	LINK-SEAL® SIZE	LINKS PER SEAL
1/2	0.840	WS-2-15-S-*	LS-275-***	5
3/4	1.050	WS-2-1/2-20-S-*	LS-275-***	6
1	1.315	WS-2-1/2-20-S-*	LS-200-***	5
1-1/4	1.660	WS-3-21-S-*	LS-275-***	8
1-1/2	1.900	WS-3-21-S-*	LS-200-***	7
2	2.375	WS-3-1/2-22-S-*	LS-200-**	8
2-1/2	2.875	WS-4-23-S-*	LS-200-***	9
3	3.500	WS-6-28-S-*	LS-360-***	7
3-1/2	4.000	WS-6-28-S-*	LS-340-***	9
4	4.500	WS-6-28-S-*	LS-300-***	10
5	5.563	WS-8-32-S-*	LS-340-***	13
6	6.625	WS-10-36-S-*	LS-475-***	10

NOTES:

(Example LS-475-C-17).
Technically there is no limit to the pipe size that can be sealed using Link-Seal® modular seals. Please contact factory for sizes not listed and for CS model plastic sleeves for walls less than 8"

14 15

^{* =} Specify sleeve length in inches
*** = Specify LS Model C, S-316, L...etc when ordering

Indg EQUIPMENT CO., INC.

680 Hollow Rd * Phoenixville PA 19460 * Phone 610-935-9500 * Fax 610-935-9517 * adgeqco@msn.com

	LINK SE	EAL® QUOTATION	
TO: Cory	*	froм: MDG Equipment Co., Inc.	
COMPANY: Sevenson		DATE: 8/6/2010	
FROM: Cindy		TOTAL NO. OF PAGES INCLUDING COVER.	
RE: Thunderline Link Se Seals & Wall Sleeves	al® Modular	ўОВ :	4

Qty.	Pipe Size & Type	Link Seal Model #	# of Links Needed to seal one Hole	Wall Sleeve Model –Based on Sch. 40 Steel	Sleeve ID
(1)	6" DIP 6.9OD	LS-410-OS	10 LINKS	WS-10"	10.02"
(1)	2"K	LS-275-OS	10 LINKS	WS-3.5"	3.55"
(1) (1)	2"K 1 ¼ " K	LS-275-OS LS-200-OS	10 LINKS 5 LINKS	WS-3.5" WS-2.5"	3.55° 2.47°

Terms are 1/10/net 30, Frt is FOB Houston, TX-pre-pay + add to invoice, Delivery is approx 1 week, OS Link Seal are a special order item and non-returnable. Prices valid for 30 days.

Thank you,

Cindy Bouchard MDG Equipment Co., Inc.





Pipeline Seal & Insulator, Inc.

6525 Goforth Street, Houston, TX 77021 USA
Telephone: 713-747-6948
Fax: 713-747-6029
E-Mail: www.pipelineseal.com
www.linkseal.com

SOLD TO

SET WILL BE FREE - AFFEE S

SHIP TO

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SALESMA	NTERRITORY	CUSTOMER NO.	CUSTOMER PUR	RCHASE ORDER NO.		
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SHIP VIA				COMPLETE PARTIAL CARTONS WEIGHT	FRT CODE (FOB FACTO	ORY)
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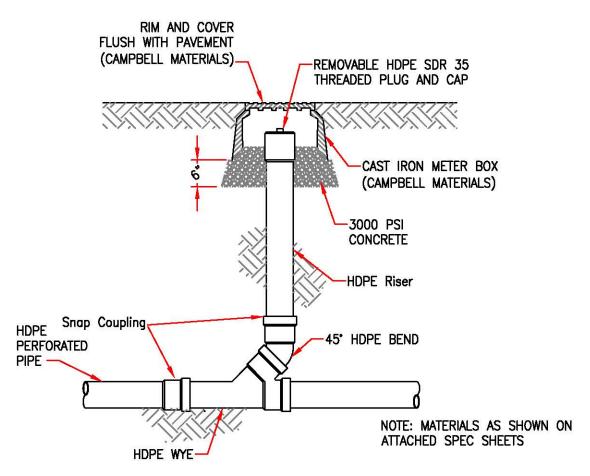


Developed Area Ground Water Collection System Material Index

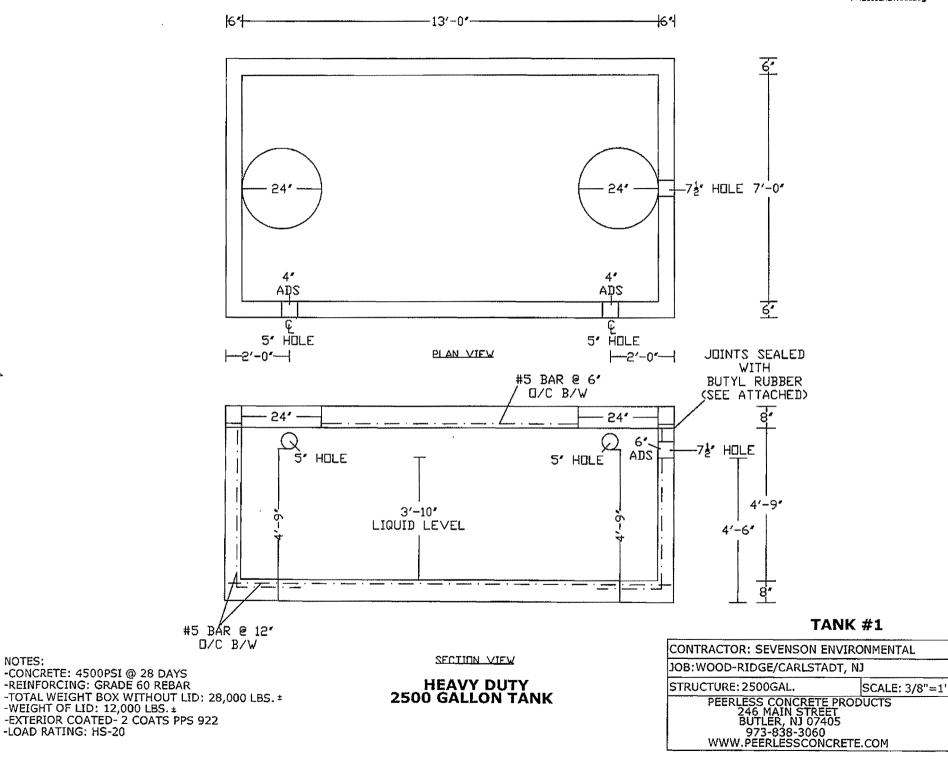
Developed Area Groundwater Collection System Sketch	2
2,500 Gallon Tank Shop Drawing	4
Manhole Frame and Cover Shop Drawing	6
Snap Coupler Section Properties	7
Cleanout Plug Shop Drawing	8
Cleanout Female Adapter	9
Cleanout Flexible Couplings	10
Cleanout Cover Shop Drawing	11
HDPE Wye Section Properties	12
HDPE Elbow Section Properties	13
Perforated HDPE Pipe Section Properties	14
Cleanout Road Box Shop Drawings	16

TRAI	TRANSMITTAL OF SHOP DRAWINGS, EQUIPMENT DATA, MATERIAL SAMPLES, OR MANUFACTURER'S CERTIFICATES OF COMPLIANCE	DATA, MATERIAL SAN OF COMPLIANCE	MPLES, OR	DATE: July 12, 2010	2, 2010	TRANS	TRANSMITTAL NO.	
							2620-01A	
	SECTION I - REQUEST FOR APPROVAL OF THE FOLLOWING ITEMS (This section will be initiated by the contractor)	APPROVAL OF THE FOLL	LOWING ITEMS	S (This section w	ill be initiated l	by the contractor)		
ë	PARSONS	FROM: Sevenson Environmental	ronmental	Sevenson Job No.	o No. 1027	CHECK ONE:	ONE	
	150 Federal Street 4th Floor	2749 Lockport Road	Road			XTHIS	X THIS IS A NEW TRANSMITTAL	MITTAL
Attn:	Boston, MA 02110 Attn: Chris Greene	Niagara Falls, NY 14305	NY 14305			TRAN	I HIS IS A KESUBMITI TRANSMITTAL	AL OF
SPEC	SPECIFICATION SEC. NO. (Cover only one section with	PROJECT TITLE AND LOCATION:	LOCATION:			CHECK ONE	CHECK ONE: THIS TRANSMITTAL IS	TAL IS
each tr	each transmittal	Ventron/Velsicol Superfund Site OU-1	rfund Site OU-	_				
Section	Section 2620 Sub Drainage System	Developed area Wood Bidgs and Carletadt Boroughe New Jorean	sdallorod thet	Now lorsey		FOR	□ FIO X AF	X APPROVAL
ITEM	DESCRIPTION OF ITEM SUBMITTED	MFG OR CONTR. CAT.	NO.	CONTRACT REFERENCE	EFERENCE	FOR CONTRACTOR	VA	FOR CE
	(Type size, model number/etc.)	DE AMING OB	COBIEC	NOCOCI VEDE VED VED VED VED VED VED VED VED VE	DDAMING	OSE CODE	incitionion	300
		BROCHURE NO.	COLIES	PARA. NO.	SHEET NO.		No. 6)	9000
ä.	b.	3	d.	ö	f.	G	ų.	·-;
_	Detail to address comments from 2620-01	SES sketch	5	2.01, 2.02,				
REMARKS	RKS			I certify that the	above submit	I certify that the above submitted items have been reviewed in detail and are	reviewed in det	ail and are
Attach materit traffic a	Attached sketch shows detail for four(4) cleanouts to be installed along the sub drainage system. All materials to be used are as previously submitted. Please note that none of these cleanouts are within traffic areas (paved roads). Also note the riser will be same type of material as the cap and plug (HDPE	ed along the sub drainage system. All hat none of these cleanouts are within e of material as the cap and plug (HDP)	/stem. All are within plug (HDPE	correct and in strict conformance with the specifications except as other wise stated. Javson Stark	strict conforma except as other rK	correct and in strict conformance with the contract drawings and specifications except as other wise stated. Javson Stark	ct drawings and	
SDR 3	SDR 35) to eliminate any additional coupling devices necessary between differing materials.	between differing materials.				NAME AND SIGNATURE OF CONTRACTOR	ONTRACTOR	
		SECTION II - APPROVAL ACTION	PPROVAL AC	HON				
ENCLC	ENCLOSURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNATURE OF APPROVING AUTHORITY	TURE OF APPR	OVING AUTHORI	TY	DATE		

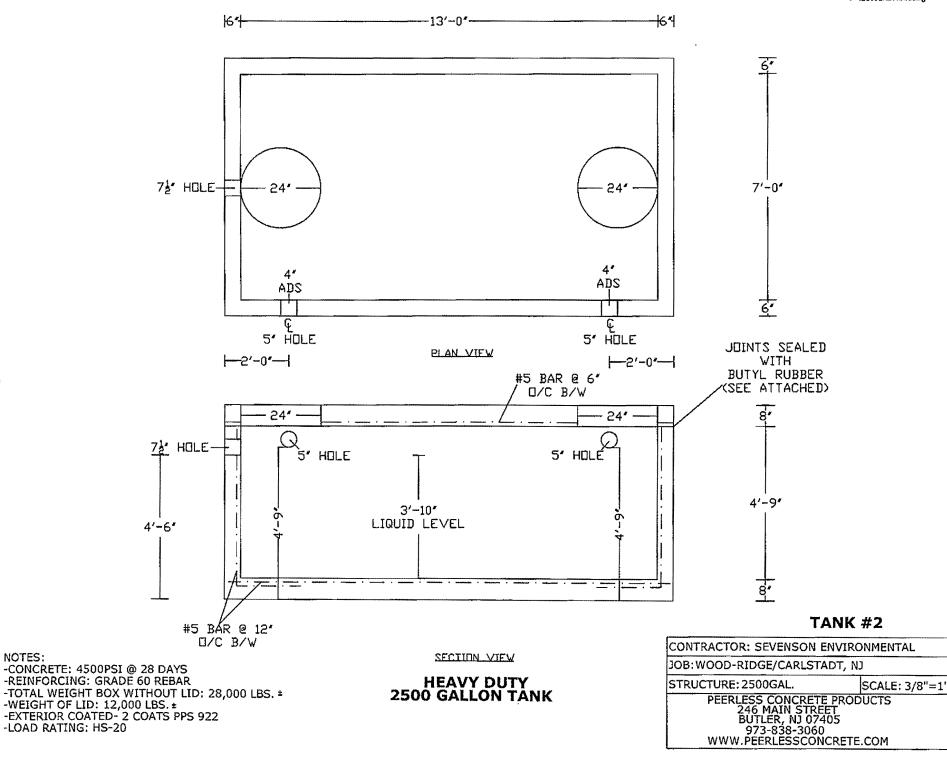
Sevenson Environmental Services, Inc.



SUBMITTAL 2620-01A CLEANOUT SKETCH N.T.S.



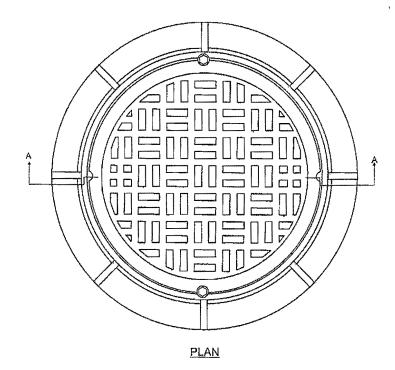
NOTES:

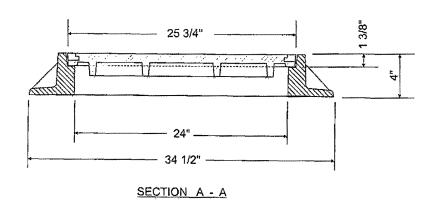


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NOTES:

-LOAD RATING: HS-20





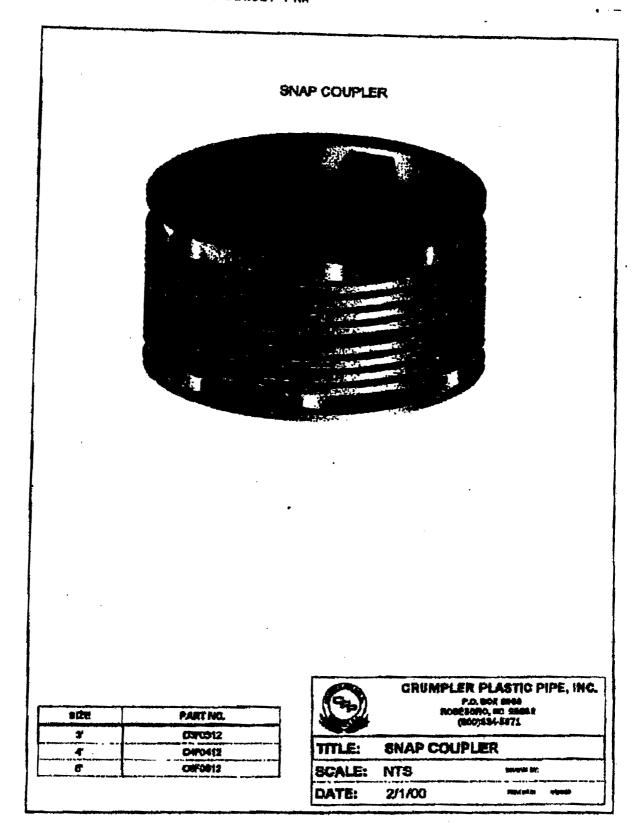
NOTES:

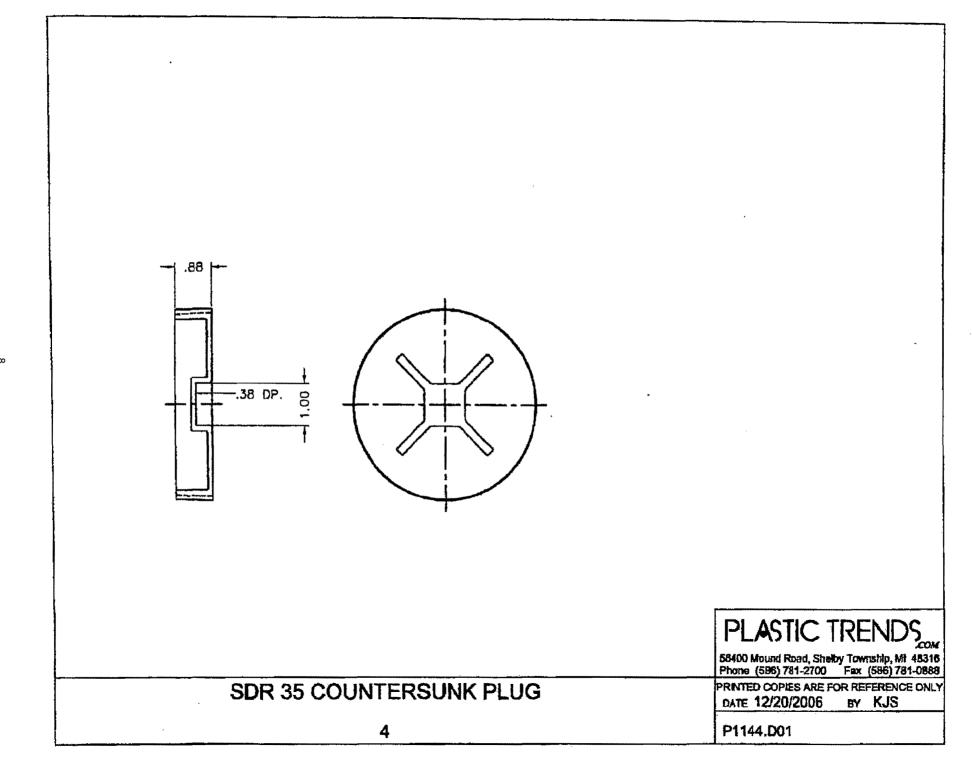
- 1. Material Gray Cast Iron ASTM A48-83, Class 35B;
- Bearing surface at seat of frame and cover shall be machined for uniformity;
- Cover shall be bolted to frame with two recessed, 1/2"-13 stainless steel hex head caps screws 180 degrees apart, and made watertight with a flat neoprene gasket and two non-penetrating pick holes;
- 4. Castings supplied without surface coating.

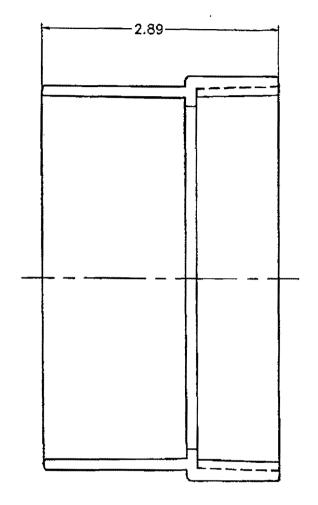
	MPBELL FOU Harrison, I one: 973-483-5480	NDRY COMPANY N.J. 07029 FAX: 973-483-1843
SCALE:	APPROVED BY:	DRAWN BY: D.L.
DATE: 09/09/09		REV:
Heavy Dut	y Watertight Man	hole Frame & Cover
Pattern Number	r: 1009A	

6

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PLASTIC TRENDS

56400 Mound Road, Shelby Township, MI 48316 Phone (588) 761-2700 Fax (588) 781-0888

PRINTED COPIES ARE FOR REFERENCE ONLY DATE 2/15/2006 BY KJS

P1404.D01

SDR 35 FEMALE ADAPTER SEWER HUB X FEMALE THREAD 4X4



Maximum test pressure: 4.3 PSI (29.6KPA) Maximum operating temperature: 140° F nonconsistent

Fernco Flexible Couplings

The industry standard for sewer, drain, waste & vent piping.

Specially formulated PVC compound positively seals any sewer and drain connection.



Because of their quality and ease of installation, Femco Flexible Couplings have found wide acceptance among sewer and plumbing contractors and municipalities. Fernco couplings are used for all types of Iri-house and sewer applications: drain waste, repairs, vent piping, house-to-main, cut-ins, conductor and roof drains and increasers-reducers.

> Made of tough elastomeric polyvinyl chloride (PVC), they are strong, resilient and unaffected by soil conditions. They are also resistant to chemicals, ultraviolet rays, fungus growth, and normal sewer gases due to the inert nature and physical properties

of the material. And they are leakproof. rootproof and seal against infiltration and

exhitration.

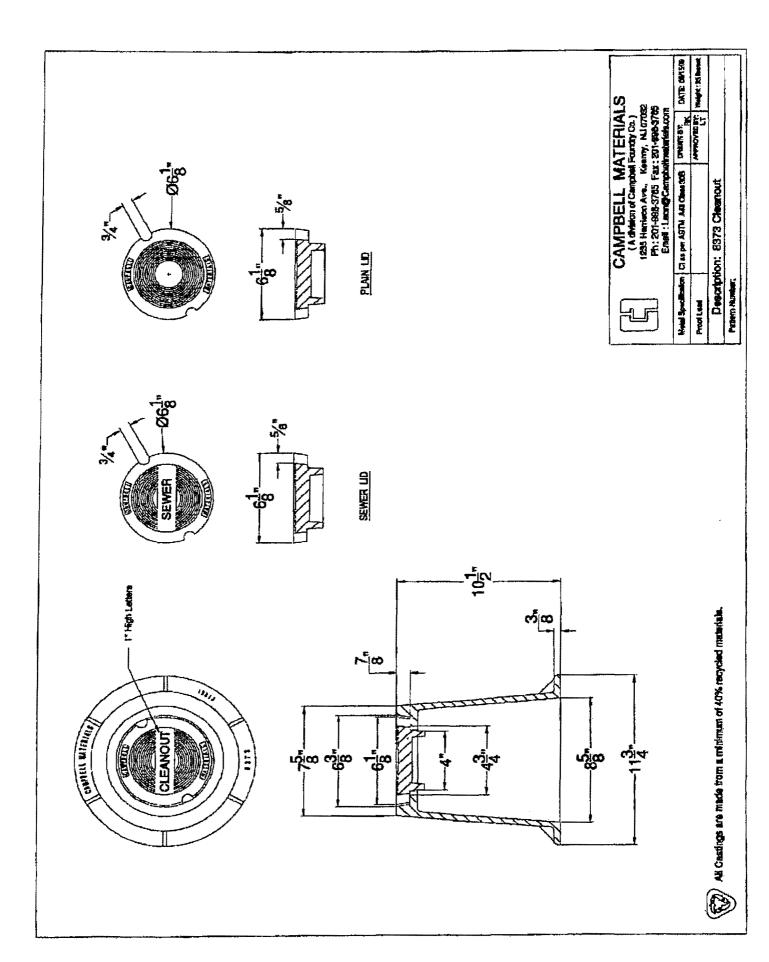
Tested designs backed by over four decades of proven performance.

- Positive seal against infiltration and exfiltration
- Leakproof, rootproof and areresistant to chemicals, ultraviolet rays, fungus growth, and normal sewer gases
- Conforms to ASTM #D5926, C1173 and applicable portions of ASTM #C443, C425, C564, CSA 8602 and D1869
- Connects pipes of same or different sizes and materials quickly and easily
- Stainless steel clamps are corrosion-resistant and rustproof

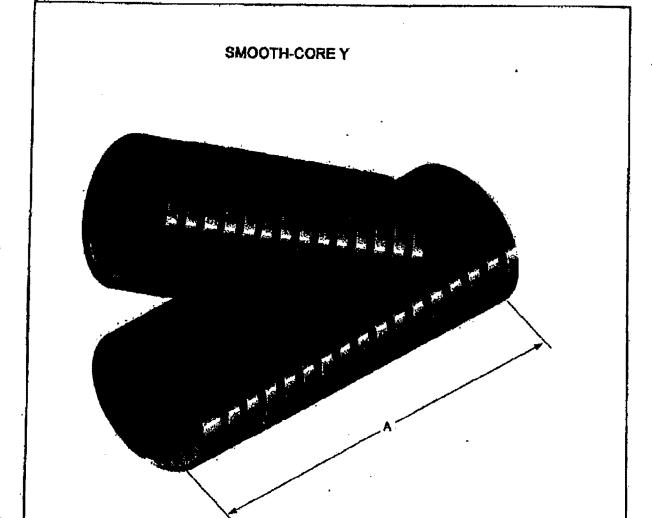
The dimensional flexibility of Fernco couplings ensures leakproof seals on virtually any pipe material: plastic, cast iron, asbestos cement, clay, concrete, steel, copper and ductile fron. All couplings are clearly marked with part number, size, and pipe materials that the coupling will connect. Fernco makes fast delivery of stock Items with no minimum order regulred. For special applications, our custom design service can supply couplings to individual customer requirements.



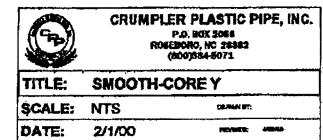
Fernco, Inc. - Divisor, Nd. - PH: 8184-71-4626 - FAX, 810-653-8714 - www.fernco.com

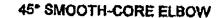


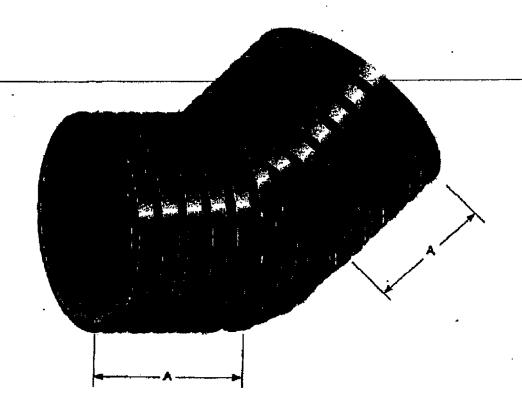
HP LHSEKJET PHA



8029	PART NO.	Α
4×4×4	04-04415C	16.6
6 x c x c	00F0641&C	20.07
B"x6'x8"	,08F05418C	25.0
10" x 10" x 10"	10F10418C	29.3*
12×12×12	125124150	40.0"
15" x 15" x 15"	15F15418C	50.7*
18" x 15" x 15"	18F18418C	65.1*
24 x 24 x 24	24P24415C	\$6.0°
30" x 30" x 30"	30F3041SC	00.07
36 x 36 x 36	36F36418C	56.0°
42 x 42 x 42	42F42418G	65.0
45" x 45" x 45"	45F45418C	68.07
NOTE: ALL	MENSIONS ARE	NOMENAL.







425	PART NO.	A
4	04F043189C	3.5
6	06F063189G	40*
5"	09F083188C	5.0°
: 10"	10F1031B8C	5.3"
12"	12F1281B8C	10.07
15"	. 15F153188C	107
15	18F1831B8C	11.5
24	24F243159C	16.0"
307	30F3031B8C	16.0
36	30P363198C	16.0"
427	42F4231B5C	16.0
45"	49F400150C	16.0"
NOTE AL	LOIMENTIONS AR	E NOMINAL



CRUMPLER PLASTIC PIPE, INC.

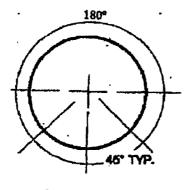
P.O. BOX 2068 ROSEBORO, NO 28662 (800)834-5071

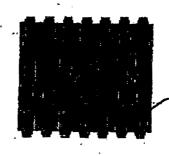
TITLE: 45° SMOOTH-CORE ELBOW

8CALE: NTS PROMITED

DATE: 2/1/00

HAMPHORES, 47(1986)





CLASS I "A"

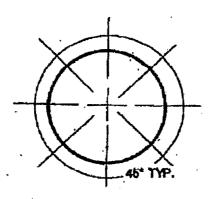
TYPE PERFORATIONS

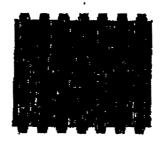
ARE IN BOTTOM HILF OP

PPE AT 3, 4:30, 6, 7:30

NIO 9 O'CLOCK POSITIONS

SPECIAL ITEM





CLASE R.TAM
TYPE PERFORATIONS
AND CROUGE ENGINEERS
EPACED EVENLY AROUND THE
PIPE PER AASHTO-M-202
AND AASHTO-M-204; ALSO
PER PPI-GPPA-100

ETDCK HEM

MPE 825	TVPE	Hole Dia.	HOLES PER LF	SQ, SL BALET AREA & F						
	CPP SINGLE WALL									
11°	٨	0.370	\$2	1.54						
	СРР ВИГОТН СОВЕ									
4	٨	0.1275	144	9.00						
10	A	0.1876	120	3.31						
*	٨	0.25	**	4,32						
10	٨	0.3125	72	6.62						
12	٨	0.576	44	5,30						
18	A	0.175	40	4.42						
18"	- A	0.375*	82	3.63						
24'	٨	0.373	24	2.65						
\$0"	A	0,376	24	2,95						
30"	A	0.275	24	2.80						

NOTE: Class II is stock. Class I is <u>special order</u>. Chert is for Class II. Class II is half of Class II for Holes per LF and SQ infet area per foot.

NOTE: CPP PERFORATED 4" THROUGH 10" SMOOTH-CORE PIPE MEETS AASHTO-M-252 TYPE "S", CLASS II IN-LET AREA AND AASHTO-M-294 TYPE "S", CLASS II FOR 12" THROUGH 48" PIPE

CPP PIPE IS PERFORATED FOR WATER ENTRY WITH CIRCULAR OPENINGS UNIFORMLY SPACED ALONG THE LENGTH OF THE PIPE.



CRUMPLER PLASTIC PIPE, INC.

P.O. BOX 2068 ROBERCRO, NO. 28362 (800)334-5071

ITTLE: STANDARD PIPE PERFORATIONS
AASHTO-252, 294 CLASS II

SCALE: NTS MANNEY.

DATE: 5/25/00 PENNEY.



CAMPBELL MATERIALS

1235 Harrison Avenue, Kearny, New Jersey 07032 Ph. 201-998-3765 Fax. 201-998-3764



CRUMPLER'S corrugated plastic tubing and accessories meets and exceeds all specifications converning corrugated plastic pipe. These Specifications include:

ASTM-F-405 for 3" - 5 Stres ASTM-F-667 for 8" -24 " CS-226

Building trade specs. for septic tanks lines and foundation drainage Sizes foundation drainage

The specifications cited above are accepted by BOCA, ICBO, SBCC & IAPMO SCS-606 AASHTO-M-252 for 3" - 10" Sizes AASHTO-M-294 for 12"-48 Sizes CPPA-PPI-100 for 3"-60 Sizes

Highway aratnege specs. Corruguted Polyethylene Pipe Association, Division of the Plastic Pipe Institute Spec.

Farm drainage specs.

The pipe manufacturing specifications listed above call for corrugated plastic pipes and culverts to be extraded from an HDPE (High Density Polyethylene) Type III; Category 3,4 or 5; Grades P-33 or P-34; Class C Polymer resinus described in ASTM-D-3350. These resins are further described in ASTM-D-1248

NOTES TO SPECIFICATION WRITERS

Both CPP SINGLE-WALL corrugated and CPF DUAL- WALL SMOOTH-CORE / B-10 corrugated meet the same AASHTO Pipe standards cited above. The two styles are differentiated by the addition of the letter "C" or the letter "S" to the end of the appropriate spec. The "C" indicates the corrugated interior wall, and the "S" indicates a smooth care interior wall. Similarly the letters "CP" indicates an interior corrugated wall that is perforated, and "SP" indicates a smooth core interior wall pipe with perforations. The AASHTO standard is based on the ASTM single wall standards cited also above. CPP pipes can be made with up to 100% re-cycled HDPE content per the test criteria in the above noted pipe standards if requested. In addition to the generic ASTM and AASHTO specifications, specification writers can also cite CPPA-PPI-100 from the CPPA-PPI (Corrugated Polyethylene Pipe Association- Plastic Pipe Institute).

CPP pipes to traffic load culvert applications shall be installed by ASTM-D-2321 with the exception that the minimum cover must be no less than one foot of compacted soil for 4" to 48". Other code references are: AASHTO-T-99, ASTM-F-477 and ASAE-EP 260.3.

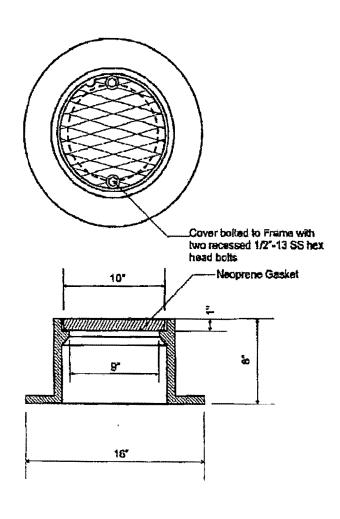
Pips Dimensions				No	rmal Diam	eter, in. (mr	(מד					
	4	6	8	.10	12	15	18	24	30	38	42	48
Pipe I.D., In. (mm)	(100)	(150)	(200)	(250)	(300)	(375)	(400)	(600)	(750)	(900)	(1050)	(1200)
Pipe O.D., In.	4.69	7.10	9.30*	11.71*	14.25*	15,39*	21.30	28.12"	35,01*	41.10	48.06*	54.35
C,O,D,	14.75	22.13	39.53	37.50*	45.13*	58.25*	87.25	89.50*	109.50"	131.13*	151.25	171.25
Pipe Weight (cz.)	5.25	15.5	26.5	39,5	56	6.5	120	158	240	288	424	512

TRAN	ISMITTAL OF SHOP DRAWINGS, EQUIPMENT	DATA, MATERIAL SAI	MPLES. OR	DATE: July 1	9, 2010		TRANSMIT	TTAL NO.	
MANUFACTURER'S CERTIFICATES OF COMPLIANCE					,				
								20-01B	
	SECTION I - REQUEST FOR A	APPROVAL OF THE FOLL	OWING ITEM	S (This section v	vill be initiated	by the cor	tractor)		
	PARSONS	FROM: Sevenson Environmental		Sevenson Jo	Sevenson Job No. 1027		CHECK ONE:		
1	150 Federal Street 4th Floor	2749 Lockport Road					X THIS IS A NEW TRANSMITTAL		
	Boston, MA 02110 Chris Greene	Niagara Falls, NY 14305					☐ THIS IS A RESUBMITTAL OF TRANSMITTAL		
	FICATION SEC. NO. (Cover only one section with	PROJECT TITLE AND I	LOCATION:			CHE	CK ONE: THIS TRANSMITTAL IS		
each tr	ansmittal	Ventron/Velsicol Supe		-1		OHL	OR OIL. II	IIO INANGINII	AL 10
Section	1 2620 Sub Drainage System	Developed area					FOR E	I FIO X APE	PROVAL
		Wood-Ridge and Carls							
ITEM NO.	DESCRIPTION OF ITEM SUBMITTED	MFG OR CONTR. CAT. CURVE	NO.			1	NTRACTOR	VARIATION	FOR CE
NO.	(Type size, model number/etc.)	DRAWING OR	OF COPIES	SPEC.	DRAWING	USE	CODE	(See instruction	USE CODE
		BROCHURE NO.	001 120	PARA, NO.	SHEET NO.			No. 6)	CODE
a.	b.	c.	d.	e,	f.		g.	h.	j.
ļ									***************************************
1	Watertight Cover and frame	Campbell Foundry	5	2.01, 2.02,					
				2.03					-
								-	
REMAR	RKS							viewed in deta	il and are
Attach	ed are two watertight frame and covers.			correct and in specifications				drawings and	
			Jayson Stark						
			NAME AND S			SIGNATU	SIGNATURE OF CONTRACTOR		
		SECTION II - A	PPROVAL A	CTION					
ENCLO	SURES RETURNED (List by Item No.)	NAME, TITLE AND SIGNA	ATURE OF APPR	OVING AUTHORITY DAT		DATE	ATE		
]			

Sevenson Environmental Services, Inc.

Monument Box Frame & Watertight Cover



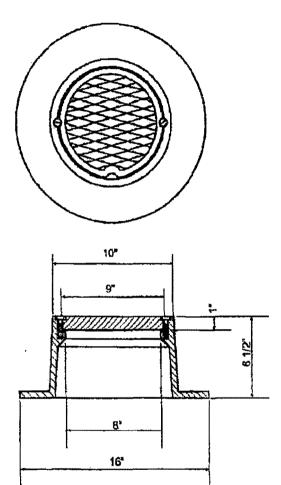


MATERIAL: Gray Cost Iron ASTM A48-83, Class 30B

	MPBELL FOUI Harrison, N	NDRY COMPANY
	one: \$73-483-5480	FAX: 973-483-1843
Rine	AMIDVEDIM	D.L.
CME: 07/12/0		eec:

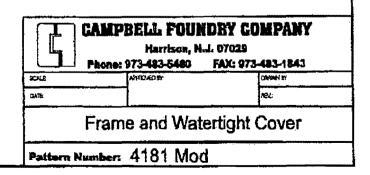
Pattern Number: 4155

Frame and Watertight Cover



Notes:

- 1. Material: Gray Cast Iron ASTM A48-83, Class 35,
 AASHTO HS20-44 Highway Loading;
 2. Cover shall be boited to frame with two machine screws,
 180 degrees apart and made watertight with a 1/8" thick neoprene gasket;
 3. Supplied without surface coating.



4181 Mod

APPENDIX D.7 – WEST DITCH TIDE GATE

West Ditch Tide Gate Material Index

Sheet Pile Section Properties	2
DeNeef Joint Sealant Product Information	5
Coal Tar Epoxy Coating Product Information	13
Check Valve Product Information	19
Reinforced Concrete Pipe and Flared End Section Properties	29
Reinforced Concrete Pipe Collar Reinforcement Layout	31
Reinforced Concrete Pipe Section Connection Details	33
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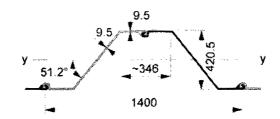
Sitemap

Calculation

NL | EN | FR



Profile : AZ 19-700



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Steel sheet piling

Z sections

U sections

Straight web sections

Cold formed sheet piles

Tube combined walls

HZ combined walls Used sheet piles

Steel tubes

HP foundation piles

End products Driving equipment

Accessories

Download Autocad DWG or DXF file.

	Sectional area			Moment of inertia	section modulus	Radius of gyration	Coating area
	cm ²	kg/m	cm ⁴	cm ³	cm	m²/m	
Per S	101.9	80.0	28560	1310	16.50	0.93	
Per D	203.8	160.0	55130	2620	16.50	1.86	
Per m of wall	145.6	114.3	39380	1870	16.50	1.33	

^{*}One side, excluding inside of interlocks. S = Single pile D = Double pile

Disclaimer

product data



Selection & Specification Data

Generic Type

Coal Tar Epoxy

Description

Renowned high build coal tar epoxy for protection for steel and concrete in single or two-coat applications in a broad variety of aggressive industrial applications.

Features

· Excellent chemical, corrosion and abrasion resistance

 High-build, 16-24 mils (400-610 microns) in a single coat (up to 35 mils with force curing)

 Compatible with controlled cathodic protection

· Suitable for use in exposures as referenced in the following specifications*:

•Corp of Engineers C-200, C200a

AWWA C-210 for exterior

•SSPC-Paint 16

•Steel Tank Institute Corrosion Control System STI-P3

Color

Black (0900)

Finish

Gloss. Will discolor, chalk and lose gloss in

sunlight exposure.

Primers

Self-priming, Carboguard 888, or others as

recommended

Topcoats

Not recommended

Dry Film Thickness Normally 16.0 mils (400 microns) in one or two coats.

Total dry film thickness less than 8 mils (200 microns) or in excess of 35 mils (610 microns) is not recommended. Wet-on-wet spray techniques should be used for high thicknesses allowing time for solvents to flash

between passes.

Solids Content

By Volume:

74% ± 2%

Theoretical Coverage Rate

1187 mil ft2 (29.1 m2/l at 25 microns) Allow for loss in mixing and application

VOC Values

As supplied:

1.85 lbs/gal (222 g/l)

Thinned:

20 oz/gal w/ #10:* 2.6 lbs/gal (309 g/l) 25 oz/gal w/ #10: 2.7 lbs/gal (327 g/l)

These are nominal values.

*Maximum thinning for 250 g/l restricted areas

is 6 oz/gal.

Dry Temp. Resistance Continuous:

Non-Continuous: 370°F (190°C)

350°F (177°C)

Wet Temp.

Immersion temperature should not exceed

Resistance 120°F (49°C).

Limitations

Do not use for potable water requirements

August 2005 replaces March 2003

Substrates & Surface Preparation

General

Surfaces must be clean and dry. Employ adequate methods to remove dirt, dust, oil and all other contaminants that could interfere

with adhesion of the coating.

Steel

SSPC-SP10 Immersion: Non-Immersion:

SSPC-SP6

SSPC-SP2 or SP3 as minimum requirement. Surface Profile: 2.0-3.0 mils (50-75 micron)

Concrete

Concrete must be cured 28 days at 75°F (24°C) and 50% relative humidity or equivalent. Prepare surfaces in accordance with ASTM D4258 Surface Cleaning of Concrete and ASTM D4259 Abrading Concrete. Voids in concrete may require surfacing.

Performance Data

	Test Method	System	Results	Report #
	ASTM D4060 Abrasion	Blasted Steel 2 cts. 300M	130 mg. loss after 1000 cycles. CS17 wheel, 1000 gm load.	02877
	ASTM D4541 Adhesion	Blasted Steel 2 cts. 300M	1443 psi (Pneumatic)	02877
	ASTM D2794 Impact	Blasted Steel 2 cts. 300M	Impact site diameter. Inches: 3/8, 3/8, ¼ 100 in/lbs Gardner Impactor at ½ in. diam.	02877
201	ASTM B117 Salt Fog	Blasted Steel 2 cts. 300M	No blistering, rusting or delamination. No measurable undercutting at scribe after 2000 hrs.	02938

Test reports and additional data available upon written request.

To the best of our knowledge the technical data contained herein is true and accurate on the date of publication and is subject to change without prior notice. User must contact Carboline Company to varily correctness before specifying or ordering. No guarantee of accuracy is given or implied. We guarantee of our products to conform to Carboline quality control. We assume no responsibility for coverage, performance or injuries resulting from use. Liability, if any, is limited to replacement of products. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY CARBOLINE EXPRESS OR IMPUED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, Carboline® and Bitumastics are registered trademarks of Carboline Company.

3

^{*} Disclaimer: Bitumastic 300M is a proprietary formula that is not necessarily formulated to the exact compositional guidelines set forth in some of these standards. Minor deviations that control and improve application characteristics may be present, but does not have a detrimental effect on the suitability for use outlined therein.

Bitumastic® 300M

Application Equipment

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results. General Guidelines:

Spray Application (General)

This is a high solids coating and may require adjustments in spray techniques. Wet film thickness is easily and quickly achieved. The following spray equipment has been found suitable and is available from manufacturers such as Binks, DeVilbiss and Graco.

Conventional Spray

Pressure pot equipped with dual regulators, 3/8° I.D. minimum material hose, with 50' maximum material hose .086" I.D. fluid tip and appropriate air cap.

Airless Spray

Pump Ratio: 30:1 GPM Output: 3.0 (min.) Material Hose: 1/2" I.D. (min.) Tip Size: .023-.035" Output PSI: 2100-2500 Filter Size: 30 mesh

Teflon packings are recommended and available

from the pump manufacturer.

Brush & Roller (General)

Recommended for touch up, striping of weld seams and hard-to-coat areas only. Avoid excessive re-

brushing or re-rolling.

Brush Use a medium bristle brush.

Use a short-nap synthetic roller cover with phenolic

Mixing & Thinning

Power mix separately, then combine and power mix Mixino for a minimum of two minutes. DO NOT MIX

PARTIAL KITS.

Ratio

Roller

4:1 Ratio (A to B)

Thinning

Up to 20 oz/gal (16%) w/ #10

Up to 25 oz/gal (20%) w/ #10 for the first coat application to concrete. Use of thinners other than those supplied or recommended by Carboline may adversely affect product performance and void product warranty, whether expressed or implied.

Pot Life

75°F (24°C)

2 Hours

90°F (32°C) 1 Hour

Pot life ends when coating loses body and begins to

Cleanup & Safety

Cleanup

Use #2 Thinner or Acetone. In case of spillage, absorb and dispose of in accordance with local

applicable regulations.

Safety

Read and follow all caution statements on this product data sheet and on the MSDS for this product. Employ normal workmanlike precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.

Caution

This product contains flammable solvents. Keep away from sparks and open flames. All electrical equipment and installations should be made and grounded in accordance with the National Electric Code. In areas where explosion hazards exist, workmen should be required to use non-ferrous tools and wear conductive and non-sparking shoes.

Application Conditions

Condition	Material	Surface	Ambient	Humidity
Normal	60-85°F (16-29°C)	60-85°F (16-29°C)	60-85°F (16-29°C)	0-80%
Mınimum	50°F (10°C)	50°F (10°C)	50°F (10°C)	0%
Maximum	90°F (32°C)	125°F (52°C)	110°F (43°C)	90%

Condensation due to substrate temperatures below the dew point can cause flash rusting on prepared steel and interfere with proper adhesion to the substrate. Special application techniques may be required above or below normal application conditions.

Curing Schedule

Surface Temp. & 50% Relative Humidity	Dry to Touch	Minimum Recoat Time	Maximum Recoat Time	Cure for Immersion
50°F (10°C)	8 Hours	10 Hours	24 Hours	14 Days
75°F (24°C)	4 Hours	6 Hours	24 Hours	7 Days
90°F (32°C)	2 Hours	1 3 Hours	24 Hours	5 Days

These times are based on a 16.0 mil (400 micron) dry film thickness. Higher film thickness, insufficient ventilation, high humidity or cooler temperatures will require longer cure times. Excessive humidity or condensation on the surface during curing can interfere with the cure, can cause discoloration and may result in a surface haze. Any haze or blush must be removed by water washing before recoating. If the maximum recoat time is exceeded, the surface must be abraded by sweep blasting pnor to the application of additional costs. Holiday Detection (if required): Wet sponge types may be used if the dry film thickness is below 20 mils (500 microns). High voltage spark testing should be used when the dry film thickness exceeds 20 mils (500 microns). Refer to NACE RP0188-90 for specific procedures.

Force Curing (recommended for thicknesses above 24 mils) Hold substrate temperature at 150°F for 8 hours and

150°F (65°C)

material will be ready to handle and ready for

immersion service.

Packaging, Handling & Storage

Shipping Weight (Approximate)

1.25 Gallon Kit 12 lbs (6 kg)

5 Gallon Kit 50 lbs (26 kg)

Flash Point (Setaflash)

75°F (24°C) for Part A >200°F (93°C) for Part B

Storage (General)

Store Indoors.

Storage Temperature & Humidity

40° -110°F (4°-43°C) 0-100% Relative Humidity

Shelf Life

Part A: Min. 24 months at 75°F (24°C) Part B: Min. 36 months at 75°F (24°C)

*Shelf Life: (actual stated shelf life) when kept at recommended storage conditions and in original unopened containers.



350 Hanley Industrial Court, St. Louis, 340 63144-1599 314/644-1000 314/644-4617 (fax) www.carboling.com

An RPM Company

August 2005 replaces March 2003

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SWELLSEAL® WA

Sheet Pile Applications Surface Preparation and Installation

Overview:

SWELLSEAL® WA may be used for stopping the ingress of water through sheet piling knuckles in two ways. **SWELLSEAL®** WA can be applied to the female opening of the piles, and allowed to fully cure before driving. This method is useful if the piles are to be pretreated in the contractor yard or plant prior to shipping them to the jobsite. **SWELLSEAL®** WA can also be applied in the field and the sheets drive before the material is cured. This "wet driving" method allows the contractor to drive the sheet immediately after installation of the **SWELLSEAL®** WA.

PREFERRED "WET" METHOD:

Surface preparation and installation (Wet method):

- Lay sheets out with the female side of the pile accessible.
- Clean all foreign material and the surface layer of oxidation from the knuckle by OSHA approved chemical, flame, or abrasive method.
- 3. Immediately before applying sealant, blow the knuckle clean with compressed air.
- 4. Apply an 3/8" bead of SWELLSEAL® WA into the female knuckle. Do not overfill knuckle.
- Drive the sheet pile.

ALTERNATE APPLICATION METHOD:

Surface preparation and installation (Cured method):

- Lay sheets out with the female side of the pile accessible.
- Clean all foreign material and the surface layer of oxidation from the knuckle by OSHA approved chemical, flame, or abrasive method.
- 3. Immediately before applying sealant, solvent wipe the knuckle.
- After the solvent flashes off, apply an 3/8" bead of SWELLSEAL[®] WA into the female knuckle. Do not overfill knuckle.
- Tool the SWELLSEAL[®] WA in the knuckle to roughly the shape of the male interlocking member of the sheet pile.
- Store sheet piles in such a way that they will not get standing water in the knuckle.



PRODUCT NAME SWELLSEAL® Gungrade WA

Gunnable Polyurethane Waterstop

MANUFACTURER De Neef Construction Chemicals, Inc. 5610 Brystone Houston, TX 77041 1(800) 732-0166

PRODUCT DESCRIPTION

SWELLSEAL Gungrade WA is a single component hydrophilic mastic, designed for sealing smooth to very irregular construction joints and pipe penetrations. SWELLSEAL® Gungrade WA is supplied in cartridge or sausage. Material cures and swells in the presence of moisture or water. Curing Time is dependent on temperature and humidity, i.e. curing time will decrease if temperature and pH are high. SWELLSEAL® Gungrade WA will become firm in 24-36 hours. Performance is not affected by the curing time.

APPROPRIATE APPLICATIONS

- Sealing of rough and smooth construction joints of cast in-place or precast concrete in wet and underwater applications.
- Sealing joints between pre-cast segments in wet or underwater applications (e.g. manholes, box culverts, cable ducts and pipes)
- Sealing of the joints between sheet piles.

ADVANTAGES

- Solvent free
- Due to its special formulation, SWELLSEAL® Gungrade WA can be applied to wet surfaces or in underwater applications.
- SWELLSEAL® Gungrade WA adheres to concrete, PVC, HDPE, steel, and fibreglass

Property	Value	Norm	
Solids	100%		
Uncured		44	
Viscosity	Gel / Paste		
Density (at 20°C, 68°F)	Approx. 90 lbs/cu.ft.	ASTM D 3574 95	
Slump in vertical applications	1/8 inch		
Hand dry (at 68°F and 60% rel. humidity)	10 hr		
Flash Point	> 266 °F	ASTM D 93	
Cured (7 days at 25°C (77°F) 1cm Thick)	*		
Elongation at break	Approx. 625%	ASTM D 3574 95	
Tensile strength.	Approx. 312 psi	ASTM D-412	
Resistance to hydrostatic pressure	Up to 492 feet of water column	Test DNC	
Swelling capacity in contact with water	Swells to approx. 200% of its original dry volume	Test report KUL University	

Consumption

The consumption of SWELLSEAL® Gungrade WA per linear foot depends on the quality of the

Color: white

During application: pasty, Cured: rubbery

*	Width (of the joint)	Consumption
Cartridges 10.5 oz.	1/4 inch	25 – 35 ft.
	5/16 inch	12 - 15 ft.
	3/8 inch	approx. 10 ft.
Sausages 20 oz.	1/4 inch	50 – 70 ft.
	5/16 inch	24 - 30 ft.
	3/8 inch	approx. 20 ft.

ADVANTAGES cont.

- In contact with water SWELLSEAL® Gungrade WA will expand to more than 200% of its original cured volume.
- Flexible system, which adapts to the irregular surfaces

ADVANTAGES cont.

- Easy application with standard caulking guns
- Durable cured material will exceed the life of the structure.
- Good chemical resistance *
- Resistant to petroleum products, greases, mineral and vegetable oils

(*) For Chemical resistance contact the Technical Service Department @ 800-732-0166

PACKAGING

10.5 oz.	20 oz.
cartridge	sausage
12 per carton	12 per carton
6 lbs. net	24 lbs, net
1 pallet = 105	1 pallet = 60
cartons 630	cartons 1500
lbs.	lbs.
Weight per	Weight per
cartridge:	sausage:
1.2 lbs. gross	2.2 lbs. gross
1.1 lbs. net	2.0 fbs. net

LIMITATIONS

Applied at temperatures below 40°F the material will take approx. 10 to 15 days to cure (material cures slower at cooler temperatures and conversely working and cure times will be substantially reduced at higher temperatures).

SURFACE PREPARATION .

Refer to De Neef Surface Preparation Guidelines for more details.

INSTALLATION PROCEDURES

SWELLSEAL Gungrade WA should be applied onto a dust-free concrete surface. The surface can be rough or smooth, moist or dry. Application Method for 10.5 oz. Cartridges: Break the moisture proofing aluminum foil on the top of the cartridge and remove the plug from the bottom. Screw on the nozzle and cut diagonally at the appropriate position. Place the cartridge into the caulking gun.

For 20oz. Sausages: Put the sausage in the empty tube of the bulk caulking gun and cut

1/8 inch off the top of the sausage. Close the tube and install the nozzle. Nozzles are supplied with the appropriate opening. SWELLSEAL® Gungrade WA must be applied in an uninterrupted band (minimum 3/8) inch wide and thick), gunned in the middle of the joint or prefab element. Concrete cover should be at least 3 inches on both sides, in order to avoid cracks from the pressure of material swelling. If SWELLSEAL® Gungrade WA is to be installed under water or during heavy rain the concrete operation should begin within 2 hours of application to provide confinement for the material or premature swelling may result lowering the effectiveness of the material

STORAGE & HANDLING

Store in dry area for up to 12 months from the date of production at temperatures between 40°F and 85°F for best performance. See shelf life details on the material packaging.

PRECAUTIONS

Always use protective clothing, gloves and goggles consistent with OSHA regulations during use. Avoid eye and skin contact. Do not ingest. Refer to Material Safety Data Sheet for detailed safety precautions.

SAFETY INFORMATION

In the event of an EMERGENCY call: CHEM-TREC 800-424-9300.

WARRANTY INFORMATION

De Neef Construction Chemicals, Inc. products are warranted under the policy set forth under the WARRANTY section of the De Neef Construction Chemicals Inc., product catalog, Warranty information can also be obtained via the De Neef Construction Chemicals Inc. website at www.deneef.com, or by calling 713-896-0123 or toil free at 1-800-732-0166.

Rev. 04/2006



SWELLSEAL®

Rev. 04/08

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: SWELLSEAL® WA (Swellseal Gungrade, Swellseal Cartridge, Swellseal Sausage, or Swellseal Bulk.)

MANUFACTURER: de neef Construction Chemicals Inc.

ADDRESS:

5610 Brystone Drive Houston, TX 77095

PHONE:

(800) 732-0166 (7am-5pm CST Weekdays)

FAX:

(713) 849-3340

WEBSITE:

www.deneef.com

EMERGENCY PHONE: CHEMTREC (800) 424-9300 (Anytime)

Outside US: 1-703-527-3887

SECTION 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

May cause allergic respiratory reaction, Harmful if inhaled, Respiratory sensitizer, Lung damage and respiratory sensitization may be permanent. Causes skin irritation. May cause allergic skin reaction. Skin sensitizer. Causes eye irritation.

POTENTIAL HEALTH EFFECTS

EYES:

Acute Eye: May causes irritation with symptoms of reddening, tearing, stinging, and swelling. May cause temporary corneal injury. Vapor may cause irritation with symptoms of burning and tearing.

Chronic Eye Prolonged vapor contact may cause conjunctivitis.

SKIN:

Acute Skin: May cause irritation with symptoms of reddening, itching, and swelling. Persons previously sensitized can experience allergic skin reaction with symptoms of reddening, itching, swelling and rash. Cured material is difficult to remove.

Chronic Skin : Prolonged contact can cause reddening, swelling, rash, and in some cases, skin sensitization.

INGESTION: Causes irritation. Swelling of this product in airway could cause suffocation. Ingestion of this product is harmful and maybe fatal.

INHALATION: Unlikely

5610 Brystone Dr. Houston, Texas 77041 Ph: 713/896-0123 • Fax: 713/849-3340 • www.deneef.com **PAGE 1 OF 5**



SWELLSEAL® WA

SECTION 3: HAZARDOUS INGREDIENTS

Name CAS NO. % wt/wt

Toluene diisocyanate 26471-62-5 < 0.1 %

SECTION 4: FIRST AID MEASURES

EYES:

Immediately flush eyes gently with water for at least 15 minutes, while holding open upper and lower lids. Immediately seek medical attention.

SKIN:

Remove contaminated clothing. Blot or brush the product away, prior to washing the exposed area with water. For sever exposures, to liquid product immediately get under safety shower and begin rinsing. Get medical attention if irritation develops. The cured product on the skin is rarely a cause of irritation (If it does, seek medical attention). The process of trying to remove the cured product may cause irritation.

INGESTION:

Do Not Induce Vomiting. Rinse mouth out with water. Aspiration of material into the lungs due to vomiting can cause chemical pneumonitis, which can be fatal.

INHALATION:

Unlikely route. Asthmatic symptoms may develop and may be immediate or delayed up to several hours. Extreme asthmatic reactions can be life threatening.

SECTION 5: FIRE-FIGHTING MEASURES

FLASH POINT: > 130°C (>266°F) AUTO-IGNITION TEMEPRATURE: >450°C

EXTINGUISHING MEDIA:

Dry Chemical, CO₂, Foam or Water Fog

SPECIAL FIRE FIGHTING PROCEDURES:

Do not scatter material with high pressure water streams. Firefighters should wear NFPA compliant firefighting protective equipment, including self-contained breathing apparatus. During a fire, isocyanate vapors and other irritating and/or toxic gases may be generated.

5610 Brystone Dr. Houston, Texas 77041

Ph: 713/896-0123 • Fax: 713/849-3340 • <u>www.deneef.com</u>

PAGE 2 OF 5



SWELLSEAL® WA

Rev. 04/08

HAZARDOUS DECOMPOSITION PRODUCTS:

Fire or intense heat will decompose the product into CO₂, CO, Hydrogen Cyanide, Oxides of Nitrogen, Isocyanates, Isocyanic Acid, and dense black smoke.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES:

Personal precautions: Ensure adequate ventilation if working in confined spaces. Avoid contact with eyes and wear protective clothing. Caution: spillages may be slippery.

Environmental precautions: Prevent material from entering sewage system, water courses or water treatment installations.

CLEAN-UP PROCEDURES:

V.D. and San State of the Control of

Spread sand or industrial absorbent over spillage and transfer into labeled containers for disposal. See section 13 for disposal considerations. Spilled material will polymerize under atmospheric moisture.

SECTION 7: HANDLING AND STORAGE

HANDLING: Never spray the product; do not drink, eat or smoke during handling.

STORAGE: Keep containers dry and closed. Store in original containers. Storage temperature 5 - 25 °C (41°F-77°F)

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Normal conditions of ventilation are usually adequate. Wear a fine particle mask or respirator, or use local exhaust ventilation as necessary when using in confined areas with inadequate ventilation.

HAND PROTECTION: Use protective gloves. Suitable types are pvc or neoprene. If in doubt seek advice from a reputable manufacturer. Barrier creams help to protect exposed areas but are no substitute for full physical protection. They should not be applied once exposure has occurred.

SKIN PROTECTION: Cotton or cotton/synthetic overalls or coveralls are normally suitable. Grossly contaminated clothing should be removed and the skin washed with soap and water.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Gray paste ODOR: Sweet

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SWELLSEAL[®] WA

Rev. 04/08

ODOR THRESHOLD: Not available

MELTING/ FREEZING PT: Not available

PHYSICAL STATE: Paste

FLASH POINT: > 130° C (266°F)

pH: Not applicable

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (continued)

EVAPORATION RATE: Not available RELATIVE DENSITY: 1.5g/cm³

FLAMMABILITY: Not available SOLUBILITY (H₂O): Not soluble

UPPER FLAMMABILITY LIMITS: Not available PARTITION COEFFICIENT: Not available

LOWER FLAMMABILITY LIMITS: Not available AUTO-IGNITION TEMPERATURE: >450°C

VAPOR PRESSURE: Not available VISCOSITY: Not available

VAPOR DENSITY: Not available VOC CONTENT % WT: None

DECOMPOSITION TEMPERATURE: Not available

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Stable under normal ambient conditions.

CONDITIONS TO AVOID (STABILITY): Moisture and /or heat may cause polymerization.

INCOMPATIBILITY (MATERIAL TO AVOID): Water, amines and alcohols

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: None at ambient conditions

HAZARDOUS POLYMERIZATION: Will not occur at ambient conditions.

SECTION 11: TOXICOLOGICAL INFORMATION

No information on the product itself is available.

SECTION 12: ECOLOGICAL INFORMATION

No information on the product itself is available.

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SWELLSEAL® WA

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SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Method

Waste disposal should be in accordance with existing federal, state and local environmental control laws. Incineration is the preferred method.

Empty Container Precautions

Empty containers retain product residue; observe all precautions for product. Do not heat or cut empty container with electric or gas torch because highly toxic vapors and gases are formed. Do not reuse without thorough commercial cleaning and reconditioning. If container is to be disposed, ensure all product residues are reacted or removed prior to disposal. Dispose of per local, state and federal guidelines. This product in its cured state is inert and non-toxic.

SECTION 14: TRANSPORT INFORMATION

Not considered as dangerous goods under transport regulations.

SECTION 15: REGULATORY INFORMATION

No classification required.

HMIS:

Health:1

Flammability:0

Reacticity:0

SECTION 16: OTHER INFORMATION

PREPARATION INFORMATION:

April, 2008

This MSDS is on a three year review cycle. If the date on this sheet is older than three years please contact *de neef* Construction Chemicals Inc. for an updated MSDS.

DISCLAIMER:

All information appearing herein is based on manufacturer and/ or recognized technical sources. While the information is believed accurate *de neef* Construction Chemicals Inc. makes no representations as to the accuracy or sufficiency of the information.

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CHEMTREC Transportation Emergency Phone: 800-424-9300

Pittsburgh Poison Control

Center

Health Emergency No.: 412-

681-6669

NOTE: The CHEMTREC Transportation Emergency Phone is to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals

Section 1 - Chemical Product / Company Information

Product Name:

BITUMASTIC 300 M PART A

Revision Date: 03/25/2008

Identification

PLMSDS 0165A5NL

Supercedes: 07/29/2005

Product Use/Class:

Coal Tar Epoxy - FOR INDUSTRIAL

USE ONLÝ

Preparer:

Regulatory, Department

Manufacturer:

Carboline Company 350 Hanley Industrial Ct. St. Louis, MO 63144

Section 2 - Composition / Information On Ingredients

Chemical Name	CAS Number	Weight % Less Tha	n ACGIH TLV-TW	A ACGIH TLV-STEL	OSHA PEL-TW	A OSHA-CEIL
COAL TAR FIBER PITCH	65996-93-2	35.0	0.2 MGM3	N/E	0.2 MGM3	NE
TALC	14807-96-6	30.0	N/E	N/E	N/E	N/E
POLYAMIDE	68082-29-1	15.0	NE	:NE	NE	NE
META-XYLENE	108-38-3	10.0	434 Mg/M3	651 Mg/M3	434 Mg/M3	N/E
PARA-XYLENE	106-42-3	5.0	434 Mg/M3	651 Mg/M3	434 Mg/M3	N/E
ETHYL BENZENE	100-41-4	5.0	100 PPM	125 PPM	435 MGM3	N/E
ORTHO-XYLENE	95-47-6	5.0	434 Mg/M3	651 Mg/M3	434 Mg/M3	N/E
CLAY	TRADE SECRET	5.0	NE	NE	NE	NE
ETHYL ALCOHOL	64-17-5	5.0	1000 PPM	N/E	1900 MGM3	N/E
CLAY	68911-87-5	5.0	NE	NE	NE	NE
TRIS-2,4,6-	90-72-2	5.0	NE	N/E	NE	NE
(DIMETHYLAMINOMETHYL	.):	:		i	:	
PHENOL						
MICROCRYSTALLINE	14808-60-7	0.4	0.025 MG/M3	N/E	0.1 MG/M3	N/E
SILICA	1		(respirable)		(respirable)	*
TOLUENE	_108-88 <u>-3</u>	0.2	_20 PPM	N/E	375 MGM3	NE

Section 3 - Hazards Identification

Emergency Overview: FLAMMABLE liquid and vapor. Contains SILICA which can cause cancer. Contains COAL TAR which can cause cancer. Contains AROMATIC DISTILLATE which can cause cancer. Risk of Cancer depends on duration and level of exposure.

Effects Of Overexposure - Eye Contact: Can cause eye burns.

Effects Of Overexposure - Skin Contact: Can cause skin burns. May cause allergic skin reaction.

Effects Of Overexposure - Inhalation: Harmful if inhaled, may affect the brain or nervous system, causing dizziness, headache, or nausea. May cause nose and throat irritation. May cause lung irritation. May cause allergic respiratory reaction, effects may be permanent.

Effects Of Overexposure - Ingestion: Harmful if swallowed.

Effects Of Overexposure - Chronic Hazards: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Crystalline silica is known to cause silicosis. Crystalline silica (Quartz) is classified as a known human carcinogen (Group 1) by IARC. Exposure is by route of inhalation. If material is in a liquid matrix it is unlikely to be inhaled. However, when sanding or grinding the finished product, there may be potential for crystalline silica to become airborne.

Primary Route(s) Of Entry: Skin Contact, Skin Absorption, Inhalation, Ingestion, Eye Contact

Medical Conditions Prone to Aggravation by Exposure: If sensitized to amines, epoxies, or other chemicals do not use. See a physician if a medical condition exists. If you have a condition that could be aggravated by exposure to dust or organic vapors, see a physician prior to use.

Section 4 - First Aid Measures

First Aid - Eye Contact: If material gets into eyes, flush with water immediately for 15 minutes. Consult a physician.

First Aid - Skin Contact: In case of contact, immediately flush skin with plenty of water while removing contaminated clothing and shoes. Launder clothing before reuse. If rash or irritation develops, consult a physician.

First Aid - Inhalation: If inhaled, remove to fresh air. Administer oxygen if necessary. Consult a physician if symptoms persist or exposure was severe.

First Aid - Ingestion: If swallowed do not induce vomiting. Seek immediate medical attention.

Section 5 - Fire Fighting Measures

Flash Point, F: 75F (23C) (Setaflash)

Lower Explosive Limit, %: 0.8 Upper Explosive Limit, %: 7.1

Extinguishing Media: Carbon Dioxide, Dry Chemical, Foam, Water Fog

Unusual Fire And Explosion Hazards: Flammable Liquid. Vapors are heavier than air and will accumulate. Vapors will form explosive concentrations with air. Vapors travel long distances and will flashback. Use mechanical ventilation when necessary to keep percent vapor below the "Lower Explosion Level" (LEL). Eliminate all ignition sources. Keep away from sparks, open flames and heat sources. All electric equipment and installations should be made and grounded in accordance with the National Electrical Code. In areas where explosion hazards exist, workers should be required to use non-ferrous tools and to wear conductive and non-sparking shoes.

Special Firefighting Procedures: Flammable. Cool fire-exposed containers using water spray.

Section 6 - Accidental Release Measures

Steps To Be Taken If Material Is Released Or Spilled: Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking. Evacuate the area of unprotected personnel. Wear appropriate personal protection clothing and equipment. Follow exposure controls/personal protection guidelines in Section 8. Contain and soak up residual with an aborbent (clay or sand). Take up absorbant material and seal tightly for proper disposal. Dispose of in accordance with local, state and federal regulations. Refer to Section 15 for SARA Title III and CERCLA information.

Section 7 - Handling And Storage

Handling: Do not get in eyes, on skin, or on clothing. Keep container tightly closed when not in use. Wear personal protection equipment. Do not breathe vapors. Wash thoroughly after handling. If pouring or transferring materials, ground all containers and tools. Do not weld, heat, cut or drill on full or empty containers. Use only in accordance with Carboline application instructions, container label and Product Data Sheet. Avoid breathing vapors or spray mist.

Storage: Keep away from heat, sparks, open flames and oxidizing agents. Keep containers closed. Store in a cool, dry place with adequate ventilation.

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Use explosion-proof ventilation when required to keep below health exposure guidelines and Lower Explosion Limit (LEL).

Respiratory Protection: Use only with ventilation to keep levels below exposure guidelines listed in Section 2. User should test and monitor exposure levels to ensure all personnel are below guidelines. If not sure, or not able to monitor, use MSHA/NIOSH approved supplied air respirator. Follow all current OSHA requirements for respirator use. For silica containing coatings in a liquid state, and/or if no exposure limits are established in Section 2 above, supplied air respirators are generally not required.

Skin Protection: Recommend impervious gloves and clothing to avoid skin contact. If material penetrates to skin, change gloves and clothing. The use of protective creams may be beneficial to certain individuals. Protective creams should be applied before exposure.

Eye Protection: Recommend safety glasses with side shields or chemical goggles to avoid eye contact.

Other protective equipment: Eye wash and safety showers should be readily available.

Hygienic Practices: Wash with soap and water before eating, drinking, smoking, applying cosmetics, or using toilet facilities. Use of a hand cleaner is recommended. Launder contaminated clothing before reuse. Leather shoes can absorb and allow hazardous materials to pass through. Check shoes carefully after soaking before reuse.

Section 9 - Physical And Chemical Properties

Boiling Range:

176 F (80 C) - 284 F (140 C)

Vapor Density:

Heavier than Air

Odor:

Tar Odor

Odor Threshold:

Appearance:

Viscous Black or Red Liquid

Evaporation Rate:

Slower Than Ether

Solubility in H2O:

N/D

Specific Gravity:

1.32

Freeze Point: Vapor Pressure: **Physical State:**

N/D N/D Liquid

PH:

N/D

Section 10 - Stability And Reactivity

Conditions To Avoid: Heat, sparks and open flames.

Incompatibility: Keep away from strong oxidizing agents, heat and open flames.

Hazardous Decomposition Products: Carbon monoxide, nitrogen oxides, and unidentified organic compounds. Consider all smoke and fumes from burning material as very hazardous. Welding, cutting or abrasive grinding can create smoke and fumes. Do not breathe any fumes or smoke from these operations.

Hazardous Polymerization: Will not occur under normal conditions.

Stability: This product is stable under normal storage conditions.

Section 11 - Toxicological Information

Product LD50: N/D Product LC50: N/D

Chemical Name	CAS Number	LD50	LC50
COAL TAR FIBER PITCH	65996-93-2	NOT AVAILABLE	NOT AVAILABLE
TALC	14807-96-6	NOT AVAILABLE	NOT AVAILABLE
POLYAMIDE	68082-29-1	>2000 MG/KG ORAL,RAT	NOT AVAILABLE
META-XYLENE	108-38-3	NOT AVAILABLE	NOT AVAILABLE
PARA-XYLENE	106-42-3	NOT AVAILABLE	NOT AVAILABLE
ETHYL BENZENE	100-41-4	3500 MG/KG RAT,ORAL	NOT AVAILABLE
ORTHO-XYLENE	95-47-6	NOT AVAILABLE	NOT AVAILABLE
CLAY	TRADE SECRE	ETNOT AVAILABLE	NOT AVAILABLE
ETHYL ALCOHOL	64-17-5	7060 MG/KG, ORAL, RAT	20000 PPM/10 HRS, RAT, INHALATION
CLAY	68911-87-5	NOT AVAILABLE	NOT AVAILABLE
TRIS-2,4,6-	90-72-2	2169 MG/KG ORAL	NOT AVAILABLE
(DIMETHYLAMINOMETHYL)		•	
PHENOL	:	4	
MICROCRYSTALLINE SILICA	14808-60-7	NOT AVAILABLE	NOT AVAILABLE
TOLUENE	108-88-3	5.0 G/KG RAT ORAL, 14G/KG RABBIT DERM	AL8000 PPM/4HRS, RAT, INHALATION

Section 12 - Ecological Information

Ecological Information: No data

Section 13 - Disposal Information

Disposal Information: Dispose of in accordance with State, Local, and Federal Environmental regulations. Responsibility for proper waste disposal is with the owner of the waste.

Section 14 - Transportation Information

DOT Proper Shipping

Paint

Packing Group: III

Name:

DOT Technical Name: DOT Hazard Class: N/A

Hazard Subclass:N/A Resp. Guide 128

Page:

DOT UN/NA Number:

UN 1263

Additional Notes: None.

Section 15 - Regulatory Information

CERCLA - SARA HAZARD CATEGORY

This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

IMMEDIATE HEALTH HAZARD, CHRONIC HEALTH HAZARD, FIRE HAZARD

SARA SECTION 313

This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR part 372:

Chemical Name	CAS Number
META-XYLENE	108-38-3
PARA-XYLENE	106-42-3
ETHYL BENZENE	100-41-4
ORTHO-XYLENE	95-47-6
TOLUENE	108-88-3

TOXIC SUBSTANCES CONTROL ACT

All components of this product are listed on the TSCA inventory.

This product contains the following chemical substances subject to the reporting requirements of TSCA 12(B) if exported from the United States:

Chemical Name PARA-XYLENE **CAS Number** 106-42-3

U.S. STATE REGULATIONS AS FOLLOWS:

NEW JERSEY RIGHT-TO-KNOW

The following materials are non-hazardous, but are among the top five components in this product.

Chemical Name IRON OXIDE CAS Number 1332-37-2

PENNSYLVANIA RIGHT-TO-KNOW

The following non-hazardous ingredients are present in the product at greater than 3%.

Chemical Name IRON OXIDE **CAS Number** 1332-37-2

CALIFORNIA PROPOSITION 65

Warning: The following ingredients present in the product are known to the state of California to cause Cancer:

Chemical Name
ETHYL BENZENE
MICROCRYSTALLINE SILICA

CAS Number 100-41-4 14808-60-7

Warning: The following ingredients present in the product are known to the state of California to cause birth defects, or other reproductive hazards:

Chemical Name TOLUENE **CAS Number** 108-88-3

INTERNATIONAL REGULATIONS AS FOLLOWS:

CANADIAN WHMIS

This MSDS has been prepared in compliance with Controlled Product Regulations except for the use of the 16 headings.

CANADIAN WHMIS CLASS: B2 D2A D2B

Section 16 - Other Information

HMIS Ratings

Health: 3

Flammability: 3

Reactivity: 1

Personal Protection: X

VOLATILE ORGANIC COMPOUNDS, GR/LTR MIXED (UNTHINNED): 222

REASON FOR REVISION: Changes made in Section(s): 2, 3, 11, and 15

Legend: N.A. - Not Applicable, N.E. - Not Established, N.D. - Not Determined

The information contained herein is, to the best of our knowledge and belief accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. It is the responsibility of the user to comply with all applicable federal, state, and local laws and regulations



TIDEFLEX® TF-1 AND TF-2 d Valve, Inc. ALL-RUBBER CHECK VALVES

INSTALLATION, OPERATION, AND MAINTENANCE MANUAL



TF-1

The revolutionary design of the all rubber Tideflex® Check Valve provides reliable backflow protection. This unique "duck bill" design eliminates costly back-flow from oceans, rivers or storm water and is the ideal valve for effluent diffuser systems.

Tideflex® Valves seal on entrapped solids and debris without jamming. Unlike traditional flap gates there are no hinged gates to hang open and no warping or freezing. It's virtually maintenance-free.

The Tideflex® Check Valve is available in a wide variety of elastomers and is designed to meet your exact flow specifications.



TF-2

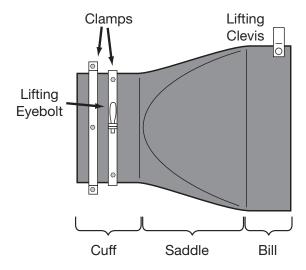
IMPORTANT

Please take a moment to **review this manual. Before performing any maintenance on the valve be sure the pipeline has been de-pressurized.** The improper installation or use of this product may result in personal injury, product failure, or reduced product life. Tideflex® Technologies can accept NO liability resulting from the improper use or installation of this product. If you have any questions or problems, please call the customer service department at (412) 279-0044. We appreciate your comments. Thank you for choosing Tideflex® Technologies.

GENERAL DESCRIPTION

The Tideflex® Technologies' Tideflex® Check Valve is an all-elastomer, one-piece check valve. Terms used in this I.O.M. to refer to various parts of the valve are described below.

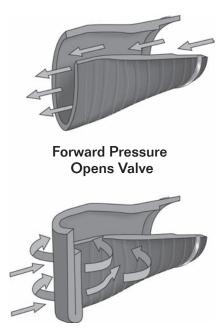
- 1. **Cuff** The Cuff is designed with a full round bore and slips over the end of the pipe.
- Saddle The Saddle is the middle part of the valve, tapering from the round cuff to the flat bill. The Saddle directs the flow to the bill, and is flexible to sustain increased flow conditions.
- 3. **Bill** The Bill is the discharge end of the valve. The Bill flexes to allow flow to discharge, yet is stiff enough to prevent the valve from opening without line pressure. Back pressure pressure created on the exterior of the valve by reverse flow or submersion will seal the lips of the bill tightly together, preventing backflow into the valve.
- 4. Clamps The clamps are tightened around the Cuff after the Cuff has been slipped over the end of the discharge pipe. These clamps are normally furnished by Red Valve Company, Inc. Hose clamps are supplied for valves up to 12". Valves 14" and up are supplied with fabricated clamps. 14"-20" are supplied with one set, 20"-54" are supplied with two sets and sizes 60" and up are supplied with three sets.
- 5. **Lifting Clevis** A lifting clevis is attached to the Bill of the Check Valve for valves 36" and up. This clevis is used during installation to assist in lifting the valve, and may be used to attach a line to the bill to help support the valve after installation.



OPERATION

Tideflex® Check Valves are custom made products intended for a specific application and have been designed to respond to criteria unique to that purpose, such as line pressure, minimum and maximum back pressure and chemical compatibility. Should the conditions for which the valve has been designed be altered or change in any way, it could affect the normal operation of the valve.

Tideflex® Check Valves work on backpressure exerted on the bill area to seal the valve. The bill may appear to be slightly open when installed. This slight opening does not affect the operation of the valve, as the valve depends on backpressure to seal.



Reverse Pressure Seals Valve

NEVER...Cut or modify check valve.

DO...

Use a soapy water solution to slide Tideflex® on pipe.

DO...

Keep valve on pallet until ready to install.

DO...

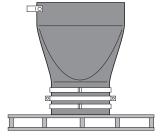
Tighten clamp bolts evenly.

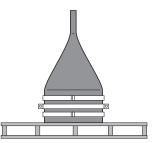
STORAGE

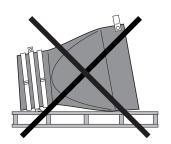
Tideflex® Check Valves should be stored in a cool, dry location on original shipping pallet with the bill facing upward (not on side) (Figure # 2). Do not drop, bend or twist Check Valve or damage may occur.

- 1. Store valve in a cool, clean, dry location.
- 2. Avoid exposure to light, electric motors, dirt or chemicals. Resilient Check Valves are subject to deterioration when exposed to ozones and noncompatible chemicals. Ozone especially causes age hardening of the elastomer.
- **3.** Store Installation Operation Manual with pro-duct so it will be readily available for installation.
- **4.** Do not remove wooden brace or metal "shipping ring" (36"+) until valve is installed.

FIGURE 2









NEVER STORE HORIZONTALLY

INSTALLATION INSTRUCTIONS — LARGE DIAMETER TIDEFLEX® CHECK VALVES 24" AND OVER

1. INSPECTION OF CHECK VALVE:

Check the inside diameter of the Cuff of the Tideflex® Check Valve to compare it to the O.D. of the outfall pipe. Inspect the outfall pipe for sharp or damaged areas. The Pipeline should be in a smooth condition to prevent cutting the Rubber Check Valve. Lifting clevis and Lifting Eye Bolts are provided only for sizes 36" vided only for sizes 36" and over.

Imperfections on the inside of the cuff area can be filled with a silicone sealant prior to installing the valve on the pipe. This will ensure a seal in the cuff area after clamps are tightened.

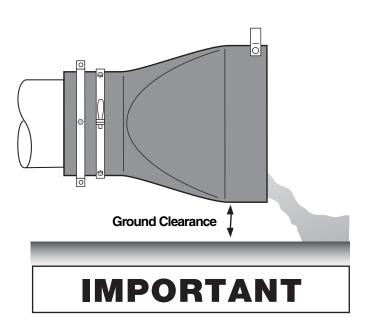
2. INSPECTION OF THE PIPE

Check the outside diameter of the pipe to determine if it matches the I.D. of the Cuff of the Tideflex® Check Valve. The Cuff of the Check Valve is usually made slightly larger to permit ease of installation.



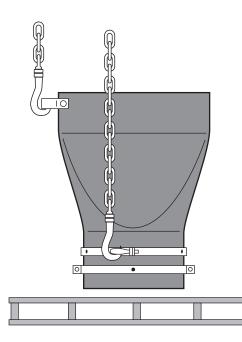
3. CLEARANCE

Make certain that sufficient ground clearance exists below the valve, at least 10% of the valve diameter. (I.E. 6" for a 60" valve)



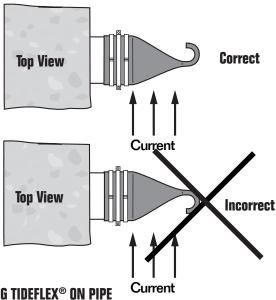
5. REMOVING THE VALVE FROM PALLET OR CRATING

A lifting clevis is provided at the top end of the Tideflex® Check Valve. Lifting eye bolts are provided on the clamps. Remove the cuff retainer "Shipping Ring" or wooden brace located inside the Cuff of the valve. The valve should be lifted from the pallet using both the clevis and the lifting eye bolts.



4A. TIDEFLEX® WITH CURVED BILL INSTALLATION IN CURRENT

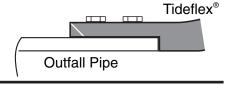
For Tideflex® fabricated with a curved bill, the valve should be installed so the bill points in the direction of the current, not facing the current which may cause the bill to be forced open.



4B. FITTING TIDEFLEX® ON PIPE

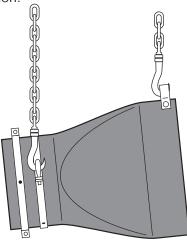
A. To facilitate the insertion of the pipe into the Tideflex[®] Check Valve, it might be necessary to grind a bevel on the inside cuff diameter.

B. Sometimes it is necessary to grind the inside of the cuff or add gasket material to the O.D. of the pipe to properly fit the Tideflex® Check Valve



6. LIFTING THE VALVE

Do not discard the metal clamps holding the valve onto the pallet; THESE CLAMPS ARE NEEDED to install the Tideflex® Check Valve. In lifting the Tideflex® Check Valve from the pallet, keep the bill end of the Tideflex® higher than the cuff for ease of installation.



7. POSITIONING THE VALVE

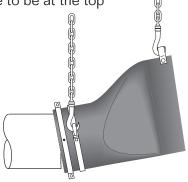
Apply a soap/water solution to the outside of the pipe in which the check valve is being installed on, to ease installation.

TF-2

With the bill end of the Tideflex® lifted higher than the cuff end start to fit cuff on the outfall line. The Tideflex® Check Valve should fit snugly against the outfall pipe, leaving no gap.

TF-1

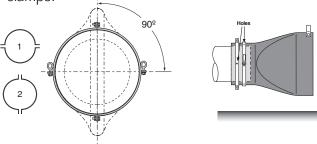
Flat portion of the valve to be at the bottom of the pipe. Flare to be at the top



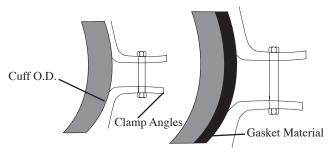
After the unit is securely pegged into position, proceed to install and tighten the first clamp. A mild lubricant may be applied to the I.D. of the **clamp** to prevent a brake shoe effect when tightening down clamps.

9. POSITIONING FOR 2 CLAMPS

Install the second clamp on the cuff of the Tide-flex®. Rotating the clamp 90° in relation to the first clamp will ensure even pressure around the valve and pipe, thus increasing the effectiveness of the clamps.

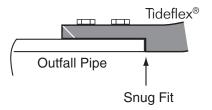


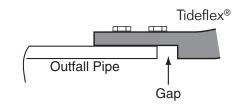
If a greater distance between the "angles" of the clamps is required to provide more range for tightening the bolts (especially if angles are bottoming out), gasket material can be wrapped around the OD of the cuff as shown.



8. SEAT TIDEFLEX® ON PIPE

The Tideflex® Check Valve should fit snugly against the outfall pipe, leaving no gap. If possible, inspect installation from the inlet end of the Tideflex® Check Valve to insure that the Check Valve Cuff fits snugly on the pipe. Do not allow a gap between the cuff and the end face of the outfall pipe. A gap will create an imbalance which will not provide proper support for the Tideflex® Check Valve. For more information, see troubleshooting.

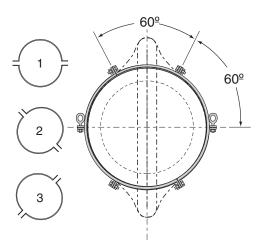




10. POSITIONING FOR 3 CLAMPS

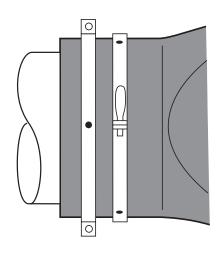
After the unit is securely pegged into position, proceed to install and tighten the first clamp. A mild lubricant may be applied to the I.D. of the **clamp** to prevent a brake shoe effect when tightening down clamps.

Install the second and third clamps on the cuff of the Tideflex[®]. Rotating the first and second clamps 60° and 120°, respectively, in relation to the first clamp will ensure even pressure around the valve and pipe, thus increasing the effectiveness of the clamps.



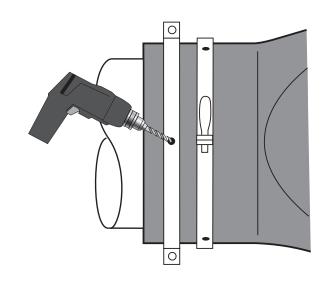
11. POSITIONING BLANK HOLES IN CLAMPS

Tighten all clamps and bolts once all components have been positioned properly. Pre-drilled holes are drilled in each clamp. These are provided so as to secure the Tideflex® Check Valve with "holding pins" to the outfall pipe. This will secure the Tideflex® Check Valve to the pipe and assure a long, trouble-free service life. After tightening the clamps, the pre-drilled holes should be staggered. Holes are not drilled in the rubber cuff of the Tideflex® at the factory since they would **not** line up to the tightened clamps.



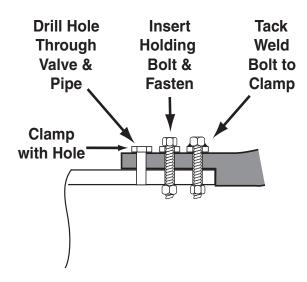
12. TACK WELDING HOLDING BOLTS TO CLAMPS

Once clamps are secure use a standard steel drill bit and drill holes through the rubber cuff. Insert holding bolts through the cuff and secure opposite side with nut, if possible. Holding bolts should be stainless steel. **Steel bolts can corrode and break off, causing the Check Valve to slip off the pipe**. Holding bolts are not provided because of various widths of the outfall pipe.



13. BOLTS TACK WELDED TO CLAMPS

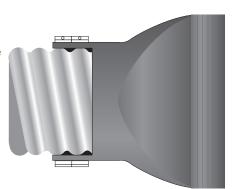
After tightening, heads of holding bolts can be tack welded to the clamps using small tacks. Certain installations will not permit installing of nuts to bolts. In these situations, the tightness of the clamps and tack weld of the bolts will assure good support.



14. CORRUGATED PIPE AND SMOOTH WALL (PVC, HDPE) PIPE INSTALLATION

For installation on corrugated pipe it is recommended that the corrugations be filled with hydraulic cement (or similar material) that will provide a smooth O.D.

For smooth wall pipe it is recommended that the valve be pinned.



TROUBLESHOOTING

Valve will not fit to pipe

- Make certain that the inside cuff retainer ring has been removed prior to fitting the valve to the pipe.
- Verify that the valve has enough area to fit over the pipe.
- If the pipe can be removed, or if an adapter ring which bolts to the wall or inside a vault is used, a crane or high-lift may be used to lower the valve onto the ring with the valve turned on end and the bill facing up.

Valve will not close fully, or check flow in opposing direction

- Possible obstruction in line. Inspect the valve for entrapped foreign objects which may have lodged between the lips of the valve.
- Valve may not be installed high enough to clear the ground under the bill. Ensure that there is enough space between the bottom of the valve and the ground in order to prevent contact of the two or debris build-
- Back-pressure may not be sufficient to completely seal the valve.
- The Valve may not have been installed in a vertical posi-

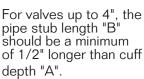
Valve will not stay on pipe

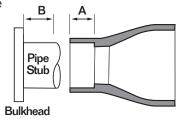
- Check all clamp bolts to assure that all bolts are tightened sufficiently.
- Valve may not be fully seated onto outfall line.
- Clamps are not rotated 90° from each other in order to provide adequate holding power.
- Valve cuff has a much larger I.D. in relation to pipe O.D.
- Make sure holding pins are used on 42" and larger Check Valves in order to prevent the valve from slipping off the line.

TF-2 Check Valves are designed to slide over a pipe stub. Too short of a pipe stub may cause the Check

Valve to slip off or cause the Check Valve to gap

open.

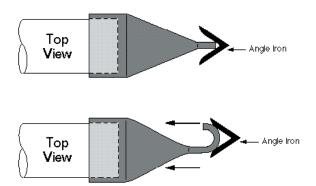


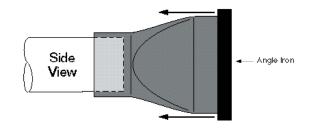


6"-14"	1" longer
16"-24"	2" longer
30"-60"	2 1/2" longer
72" and up	3" longer

* Hints to install large diameter check valves

During the installation of the check valve, if force is needed to seat the valve to the cuff stop on large diameter check valves, the force required should be induced equally around the cuff of the check valve, never at only the top, bottom or in the center. The force required to push the check valve onto the pipe can be placed on the bill but it should be distributed evenly over the entire length of the bill. Failure to distribute the pressure equally may cause improper performance of the check valve. Use a wide angle iron or large wooden planks across the bill to distribute the force equally.





MAINTENANCE

Line pressure should flush the valve clean of debris in most cases. Periodic inspections for trapped debris should be conducted.

In vacation seashore areas quart size plastic bottles have a tendency to float on top and not flush through except during a major storm.

A feathered 1" x 4", 1-1/2" x 12", or suitable plank inserted into the bill of the valve and turned 90° is a simple method of clearing the Check Valve of small debris which may be trapped between the lips.

CAUTION: Sharp objects should not be used on the Tideflex® as there is a chance of cutting the rubber and damaging the protective fabric covering.

Any gouges in the cover wrap that occur should be sealed to safeguard against ozone or chemical attack. This is best done with rubber cement or a good brand of silicone or polyurethane rubber sealer made by the major manufacturers.

Tideflex® Technologies Warranty

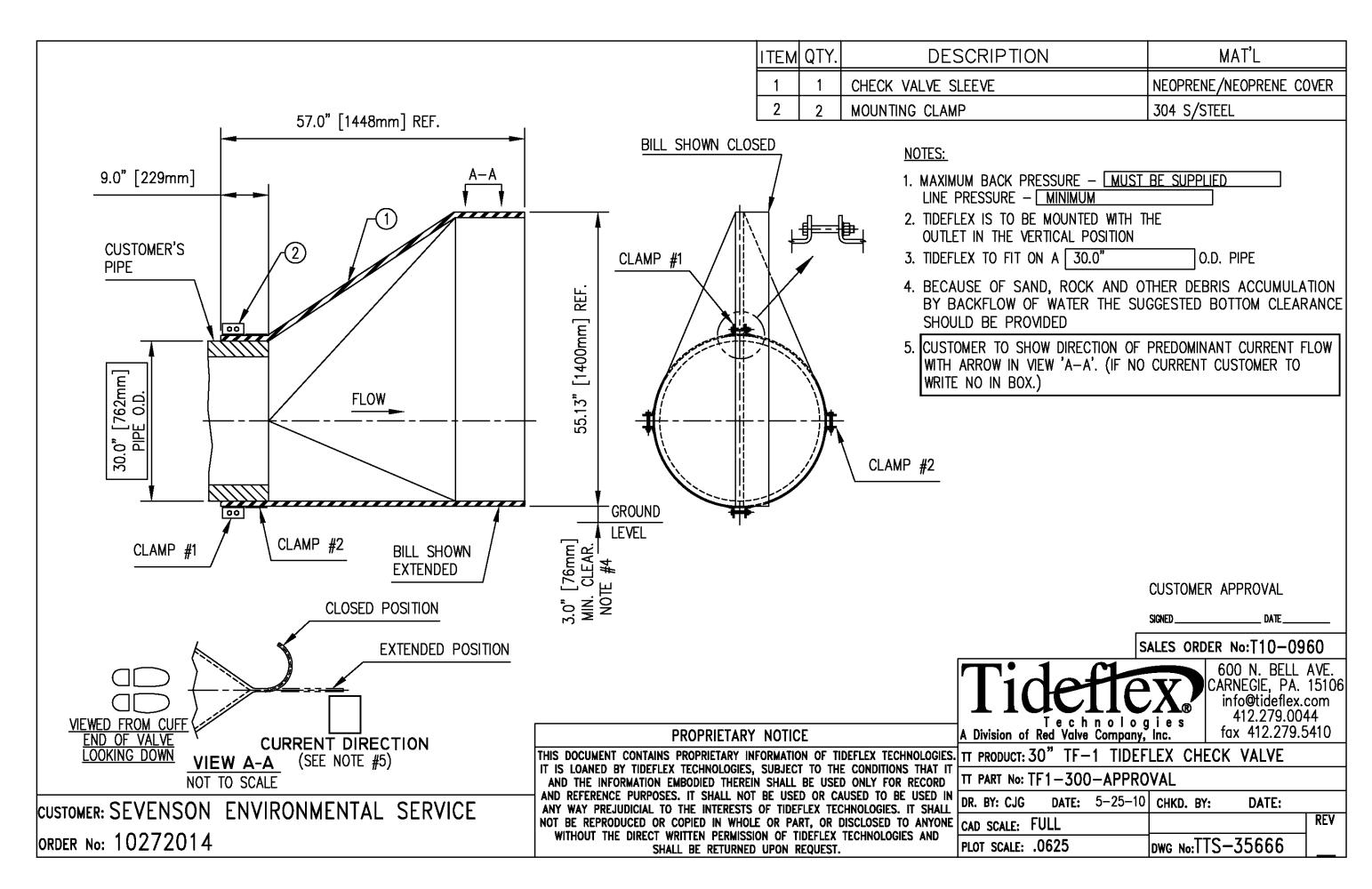
WARRANTIES - REMEDIES - DISCLAIMERS - LIMITATION OF LIABILITY
Unless otherwise agreed to in writing signed by Tideflex® Technologies, all Products supplied by Tideflex® Technologies will be described in the specifications set forth on the face hereof.

THE WARRANTIES SET FORTH IN THIS PROVISION ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES WHETHER STATUTORY, EXPRESS OR IMPLIED (INCLUDING ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ALL WARRANTIES ARISING FROM COURSE OF DEALING OR USAGE OR TRADE).

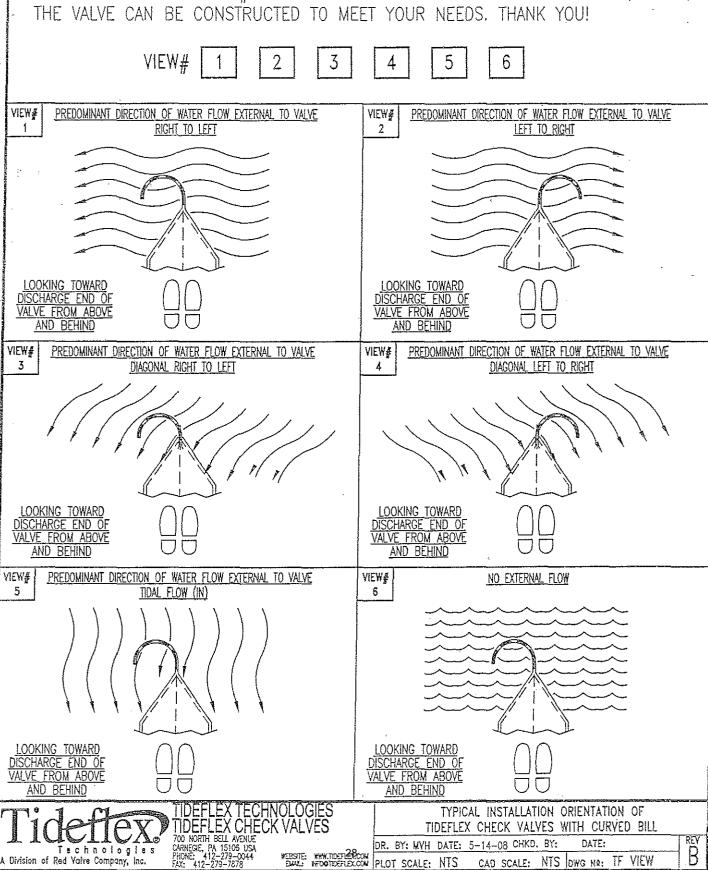
Tideflex® Technologies Products are guaranteed for a period of one year from date of shipment, against defective workmanship and material only, when properly installed, operated and serviced in accordance with Tideflex® Technologies' recommendations. Replacement for items of Red Valve's manufacture will be made free of charge if proved to be defective within such year; but not claim for transportation, labor or consequential damages shall be allowed. We shall have the option of requiring the return of the defective product to our factory, with transportation charges prepaid, to establish the claim and our liability shall be limited to the repair or replacement of the defective product, F.O.B. our factory. Tideflex® Technologies will not assume costs incurred to remove or install defective products nor shall we incur backcharges or liquidated damages as a result of warranty work. Tideflex® Technologies does not guarantee resistance to corrosion erosion, abrasion or other sources of failure, nor does Tideflex® Technologies guarantee a minimum length of service, or that the product shall be fit for any particular service. Failure of purchaser to give prompt written notice of any alleged defect under this guarantee forthwith upon its discovery, or use, and possession thereof after an attempt has been made and completed to remedy defects therein, or failure to return product or part for replacement as herein provided, or failure to install and operate said products and parts according to instructions furnished by Tideflex® Technologies, or failure to pay entire contract price when due, shall be a waiver by purchaser of all rights under these representations. All orders accepted shall be deemed accepted subject to this warranty which shall be exclusive of any other or previous warranty, and shall be the only effective guarantee or warranty binding on Tideflex® Technologies, anything on the contrary contained in purchaser's order, or represented by any agent or employee of Tideflex® Technologies in writing or otherwis

700 North Bell Avenue Carnegie, PA 15106 phone: 412 279-0044 fax: 412 279-7878

fax: 412 279-7878 WEB: www.tideflex.com



THE 6 VIEWS BELOW REPRESENT THE FLOWS IN THE AREA THAT THE VALVE IS DISCHARGING IN TO. (NOT THE FLOW THROUGH THE VALVES THEMSELVES.)
PLEASE CHECK THE VIEW # BOX BELOW THAT MATCHES YOUR INSTALLATION, SO THAT THE VALVE CAN BE CONSTRUCTED TO MEET YOUR NEEDS. THANK YOU!

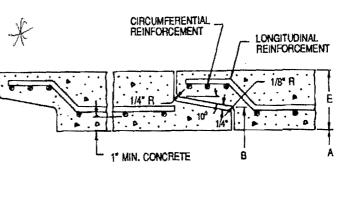


PIPE, INC.

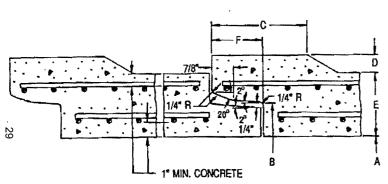


Section V

Page



21" & 24"



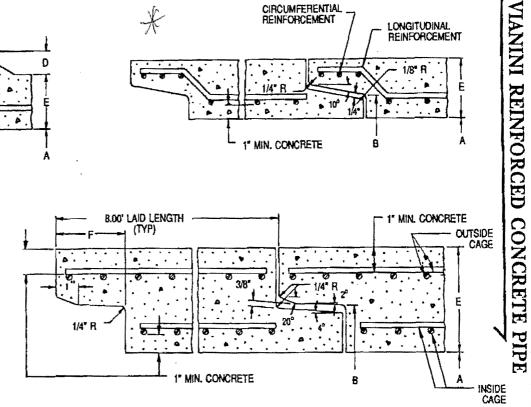
1" MIN, CONCRETE

В

12", 15" & 18" - 27" CLASS 3 & 4 & 30" CLASS 3

8.00' LAID LENGTH (TYP)

1/4" R

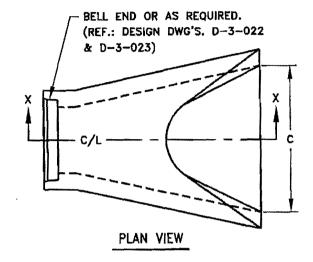


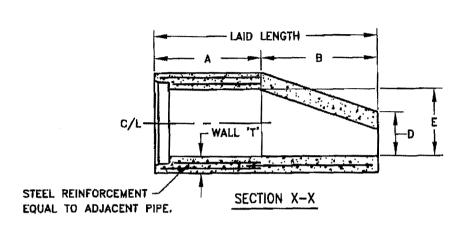
36" & 42" - 27" CLASS 5 & 30" CLASS 4 & 5

48" THRU 72"

								W										
A	INS	IDE DIA	IN.	12	15	18	21	24	27	30	36	42	48	54	60	66	72	78
8	JO	INT DIA.	IN.	14.16	17.06	20.06	23.41	26.41	30.71	34.00	40.00	46.28	52.78	58.71	65.21	71.38	77.88	84.38
C	BELL M	OD. LENGTH	IN.	4.75	4	4	•	•	6.50	7	7.50	7.50	•	•		•	-	
	BELL	MOD. RISE	IN.	.75	0.75	0.75	-	-	1.25	1.25	0.75	0.50	-	•	-	-	-	-
E	W/	ALL'T'	IN.	2	2.25	2.50	2.75	3	3.25	3.50	4	4.50	5	5.50	6	6.50	7	7.50
F	IOL :	IT DEPTH	IN.	2	2	2	3.50	3	3,50	3.50	3.50	4	4	. 5	. 5	5	5	5
	WEIGH	T PER FOOT	IN.	104	129	169	230	282	350	406	552	714	896	1110	1342	1604	1882	2194
	Ω	CLASS 3	INSIDE	0.07	0.07	0.07	0.07	0.07	0.16	0.18	0.17	0.21	0.24	0.29	0.34	0.41	0.49	0.57
	۶ <u>۲</u>	(LA33 3	OUTSIDE	٠	-	•	•	· _	-	•	0.10	0.13	0.14	0.17	0.20	0.25	0.29	0.34
-	ÇĞ.	CLASS 4	INSIDE	0.07	0.10	0.14	0.20	0.27	0.31	0.24	0.30	0.35	0.42	0.50	0.59	0.69	0.79	
	NE SE	00.00	OUTSIDE	•		-	-	-	•	0.14	0.18	0.21	0.25	0.30	0.35	0.41	0.47	
	LS.T.M. C - 76 L REINFORCED IN, SQ./FT.	CLASS 5	INSIDE	0.10	0.14	0.19	0.24	0.30	0.38	0.41	0.50	0.60	0.73	0.82	0.98			
	STL STL	ULASS 5	OUTSIDE	•	•	-	•	•	0.23	0.25	0.30	0.36	0.44	0.49	0.59			

NO.	DATE	REVISION DESCRIPTION	DR.	CK.
1	4/22/03	DIMENSIONS: A, B, C, D, & LAID LENGTH.	RML	RL





WEIGHT PER PIPE WALL LAID C D E 8 LENGTH SECTION I.D. 'T' (IN.) (IN.) (IN.) (IN.) (IN.) (LBS.) (IN.) (FT.) (IN.) 12" 2 49 24 24 13 6.00 530 15" 2-1/4 58 25-1/2 29-1/2 6-1/2 16 6.96 850 18" 9-1/2 2-1/2 55 25-1/2 36 19 6.71 1100 21* 9-1/2 22 6.88 1450 2-3/4 52 30-1/2 41-1/2 24" 42 43-1/2 48 10 25 7.13 1760 27" 37 46-1/2 11 28 6.96 2180 3-1/4 30" 12 5.96 2470 3-1/2 31 52-1/2 31 36" 41-1/2 63 - 1/222 37 7.21 3620 45 42" 4-1/2 35 61-1/2 78 21 43 8.04 5300 48" 61-1/2 49 8.04 5 35 84 22 6450 54* 35 27 55 5-1/2 65 90 8.33 8040

8.25

8750

I.D. ROUND PIPE - END VIEW

VIANINI PIPE, INC.

FLARED END SECTION FOR REINFORCED CONCRETE PIPE

DATE APPROVED BY: DRAWING NO: 1/16/85 CHAD MAHALE 1/30/85 E-3-057

ALL FLARED END SECTIONS MANUFACTURED TO ASTM C-76.

60

96

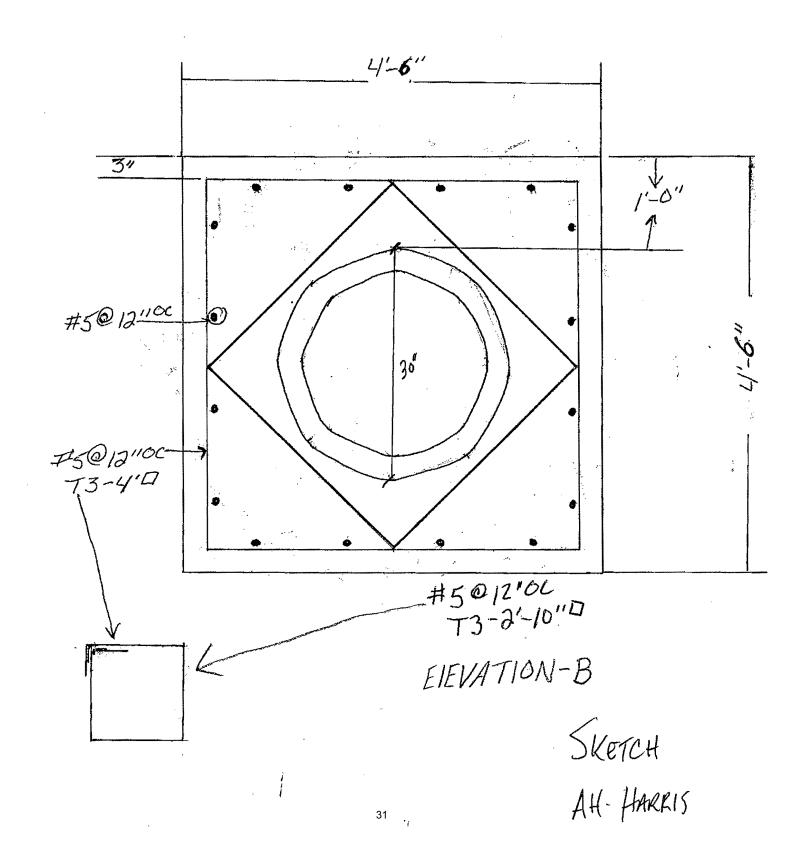
30

61

39

30

60*



32



Tide Gate and other RCP Connection Detail

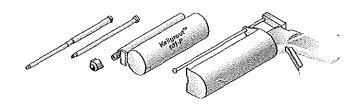
Sevenson intends to install rebar tie-backs to provide additional connection support. The materials used for this connection are as detailed in the contract drawing C-008 with the exception as follows:

- 1. No concrete covering will be placed over the tiebacks. Previously approved epoxy grout (Kelligrout) will be used in the drilled holes to provide the necessary adhesion of the rebar tiebacks.
- 2. Where necessary the bell ends of the RCP pipe will be modified to provide the adequate embedment for the tiebacks.

KELIGROUT™ Technical Data

Color	Grey	
Compressive Strength	(ASTM D695)	17,000 PSI
Tensile Strength	(ASTM D638)	5,510 PSI
Tensile Modulus	(ASTM D638)	1.14 x 106 PSI
Flexural Modulus	(ASTM D790)	1.06 x 106 PSI
Temperature Range Durin	g Installation	10°f to 110°f
Temperature Range While	In Use	-40°f to 200°f
Open Time		20 minutes at 70°f
•		10 minutes at 80°f
		5 minutes at 90°f

KELIGROUT^M 101-P

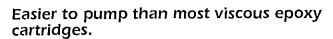


Keligrout™101-P

Horizontal application or angled up*

Easy-to-use large capacity cartridges.

Cartridges are much larger than most competitors, decreasing labor cost of frequent changes.



Can be used at sub-freezing temperatures or in rainy weather.

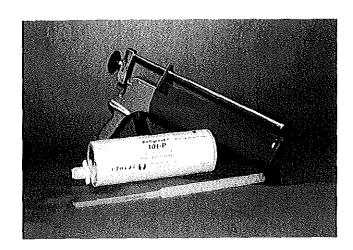
May be used under water.

Every lot guaranteed and certified.

Equipment:

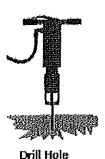
- Hand Operated
- Air Operated
- Bulk Pump

*Refer to Keligrout™ 101-P Technical and Installation Brochure

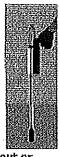


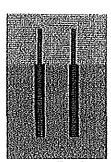


Installation of Kelken Anchors



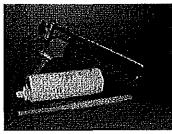






Pour Keligrout or Inject Keligrout 101-P

Insert Kelianchor or Rebar



KELIGROUTTM 101-P

Keligrout 101-pTM is a superior high strength polyester resin anchoring material with guaranteed pullout values exceeding ACI-349-85.

Horizontal, vertical or angled up/overhead with cap. Easy-to-use large capacity cartridges. Cartridges are much larger than most competitor's, decreasing labor cost of frequent changes. Easier to pump than most viscous epoxy cartridges.

Easier to pump than more viscous epoxy cartridges.

Can be used at sub-freezing temperatures or in rainy weather.

May be used underwater.

KELIGROUTTM 101-P INSTALLATION PROCEDURES

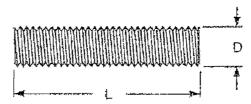
Drilling Holes:

Surface preparation is important in all chemical anchoring applications. Kelken Construction Systems recommends that all holes for anchors/rebar be made with air tools. Pneumatic drilling cleans as well as provides a rough texture inside the hole for easy bonding. If electric drilled, holes must be wired brushed in addition to air blowouts so that concrete dust and debris be cleared to allow for good bonding. When holes are DIAMOND CORED, the sides of the holes must be scored which allows the resin to develop a keying action to the concrete surface.

Page of	Fastenal Product Standard	REV_01
Date: April 6, 2010	FASTENAL:	TROD.LC.HDG

Threaded Rod, Low Carbon, Hot Dip Galvanize

The Information below lists the required dimensional, chemical and physical characteristics of the products in this purchase order. If the order received does not meet these requirements, it may result in a supplier corrective action request, which could jeopardize your status as an approved vendor. Unless otherwise specified, all referenced consensus standards must be adhered to in their entirety.



	D:	Nominal Size	D (Major Diamotor)	
	Diameter		Max.	Min.
	3/8-16	.3750	.3797	.3595
	7/18-14	.4375	.4361	.4208
	1/2-13	.5000	.4985	.4822
This would Be the 1" Rod	5/8-11	.6250	.6233	.6051
	3/4-10	,7500	.7482	.7288
	7/8-9	.8750	.6731	.8523
	1-8	1,000	.9980	.9755
	1 1/8-7	1.125	1.1228	1,0982
	1 1/4-7	1,250	1.2478	1.2232
	1 3/8-6	1.375	1,3728	1,3453
	1 1/2-6	1,500	1.4976	1.4703
	1 3/4-5	1.750	1.7473	1.7165
	2-4,5	2.000	1,9971	1,9641

Dimensions above are prior to coating

Length	Tolerance
3'	+/- 1/4"
6' - 12'	+/- 1/2"

Length shall be measured form end to end

Specification Requirements:

Standard:

ASME B18.31.3

Material &

Mechanical Properties:

ASTM A307, Grade A

Thread requirements;

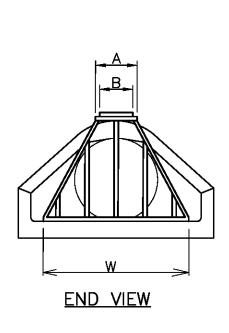
Roll threaded to ASME B1.1 UNC & UNF Class 1A BEFORE

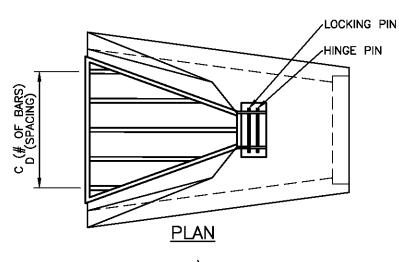
COATING.

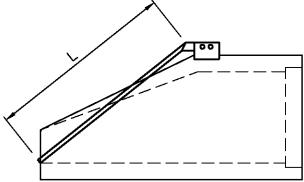
Coating:

Hot dip galvanize per ASTM A153 or F2329.

800-05A





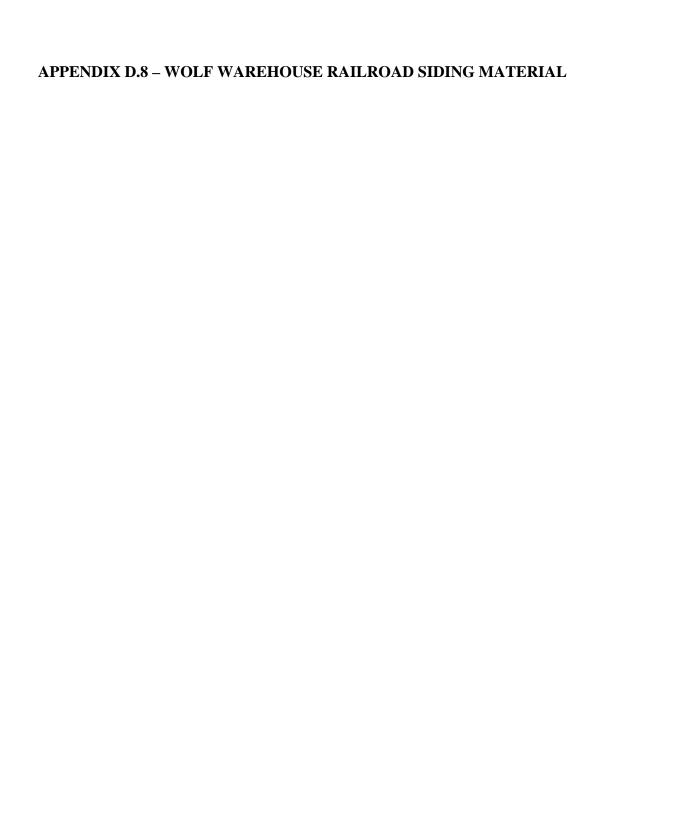


SIDE VIEW

PIPE DIAMETER	A	В	С	D	*	L
12"	11"	7.5"	3	6	21"	30"
15*	9"	5.5"	3	6.5"	27"	28"
18"	10"	6.5"	3	8"	28"	31"
24"	12"	9.5"	5	8"	40"	47.5"
30"	15"	12.5"	5	9"	52"	59.75"
36"	18"	15.5"	7	8.5"	58"	71.25"
42"	21"	18.5"	7	9"	64"	75"
48"	24"	21.5"	9	8"	70"	82.75"
54"	24"	21"	14	6"	84"	84"
60"	24"	21"	22	6"	132"	108"
72"	24"	21"	22	6"	132"	108"

STANDARD FLARED END SECTION TRASH RACK





Wolf Warehouse Railroad Siding Material Index

Direct Fixation Rail Fastener Section Properties	. 2
Concrete Insert Product Information	. 6

LETTER OF TRANSMITTAL

FROM::	1330 North A Plainfield, NJ Attn: Ellen B (908)76 FAX: (908)7 Email: TRAC	rown 9-6840 69-0068 CKSEMJ@AOL.COM @tracksunlimitedinc.da Manager ironmental t Road				
COPIES	DATE	NUMBER	DESCRIPTION			
1			Information on Direct Fixation Rail Fastener – Model F20R0			
THESE AR	E TRANSM	ITTED AS CHECK	(ED BELOW:			
□ For app	roval	Approved as submitte	ed Resubmit copies for approval			
	use 🗆	Approved as noted	□ Resubmit copies for distribution			
□ As reque		Returned for correction	ons Return corrected prints			
□ Review & h		19	□ Prints returned after loan to us			
□ For bids due 19 □ Prints returned after loan to us REMARKS:						
Please cor	ntact Bob H	ahn if you have a	iny questions.			
SIGNED:	Ellen Brow Office Mar					
Enclosure(s)					



L. B. Foster Company Transit Products Division Direct Fixation Rail Fastener Model F20R0

The F20R0 Direct Fixation Fastener was originally designed, tested and supplied to the Los Angeles Metropolitan Transit Authority (LAMTA) in the early 1990's. The Model F20R0 has subsequently been delivered to numerous transit agencies including but not limited to San Diego's MTDB, San Francisco's MUNI, New Jersey Hudson Bergen LRT, among many others. Based on original design requirements, the fastener bodies provide the following basic functions:

- Secures 115RE rail (5 ½ inch rail base) directly to a supporting concrete surface
- Stabilizes vertical and lateral rail movement
- Controls longitudinal rail movement
- Provides track noise and vibration dampening
- Electrically isolates rail from track bed
- Utilizes non threaded rail hold down spring clip type clips

The Model F20R0 has completed extensive Design Qualification and Production testing to demonstrate the fastener's response to various load environments and electrical applications. Based on the results of these tests, the F20R0 Direct Fixation Rail Fastener provides the following fundamental performance characteristics:

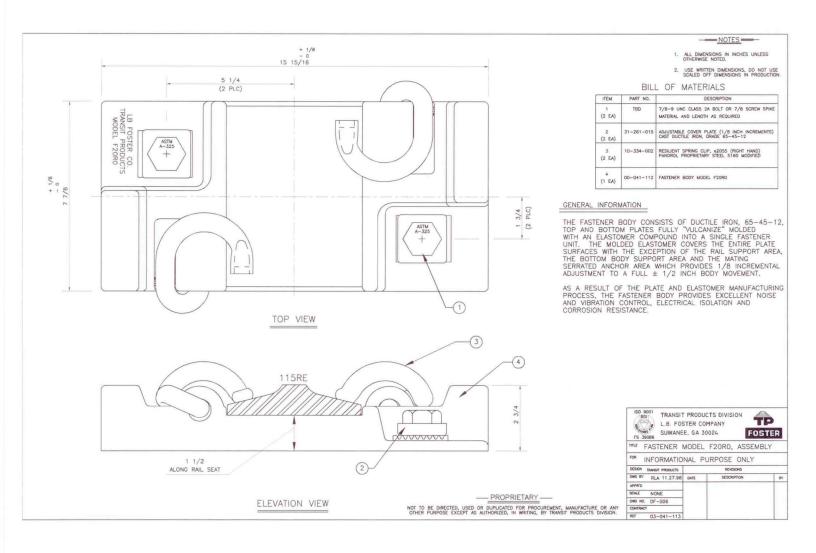
- Vertical stiffness of approximately 150,000 pounds per inch deflection as determined by "static" loading between a range of 5,000 to 12,000 pounds per fastener body loading
- ♦ With a "static" vertical force of 16,200 pounds per fastener body (offset ¾ inch towards gage) and a "static" lateral force of 9,000 pounds per fastener body, the rail head movement along the gage line is limited to less than 0.360 inches

L. B. Foster Company Transit Products Division Direct Fixation Rail Fastener Model F20R0

- ♦ Allows continuous longitudinal "slippage" of rail at approximately 3,000 to 3,400 pounds longitudinal force per fastener body
- Withstands a minimum of 15,000 volts (DC) per fastener body in a clean and dry test environment without material breakdown or electrical flashover
- Provides individual fastener body electrical resistance properties of greater than 1 million ohms (wet) and 10 million ohms (dry) at 500 volts (DC)
- Exhibits a "dynamic" vertical stiffness of approximately 1.5 times that of the "static" stiffness throughout a similar load range
- Resists repeated combined vertical and lateral "dynamic" loading in excess of 3,000,000 cycles with a single cycle consisting of:
 - vertical force of 14,000 pounds per fastener body and a simultaneous lateral force of 4,000 pounds per fastener body (towards "field")
 - release of all load to near zero
 - vertical force of 14,000 pounds per fastener body and a simultaneous lateral force of 2,500 pounds per fastener body (towards "gage")
 - final release of all load to near zero
- ♦ Resists repeated vertical uplift forces of 2,000 pounds per fastener body for greater than 1,500,000 cycles
- Resists repeated longitudinal loading of +/- 2000 pounds per fastener body for greater than 1,000,000 cycles

The above performance characteristics are provided for informational purpose only and are based solely on previous testing. Actual performances may vary from those stated above.

Variations to Model F20R0 can be made to accommodate various custom requirements. For more information concerning this Direct Fixation Fastener model or other product needs, please contact us through www.lbfoster.com or call us in our Suwanee, Georgia office at (678) 714-6730 extensions 107 or 108.





May 6, 2010

Sevenson Environmental Services, Inc. 2749 Lockport Road Niagara Falls, NY 14305

Attn: Rick Elia, II

RE: Wolf Warehouse Project

Wood Ridge, NJ

Dear Rick:

Attached is the concrete insert to be used with the F20 direct fixation plate. This product has been widely used for DF applications on the LIRR, NYCTA & Metro North.

Please contact me if you have any questions.

Very truly yours,

TRACKS UNLIMITED, INC.

Robert F. Hahn, P.E

Vice President

RFH:emb

NUMBER OF PAGES BEING FAXED ______. IF YOU WOULD LIKE THE HARD COPY MAILED, PLEASE CONTACT US, OTHERWISE THIS WILL SERVE AS YOUR HARD COPY



INSULGUARD®

Corrosion Control Systems For Concrete Rail Anchoring

NS78 Technical Sheet

The 7/8"-9 UNC InsulGuard® Insert is a structural polymer-based anchor for concrete that is designed to be either cast in place or chemically bonded in a post drilled hole.

Technical Specifications Part #: NS78

* Insert Material Specifications (Table 1)					
Tensile Strength @ Yld	26,000 psi	ASTM D638			
Elongation @ Yld	4%	ASTM D638			
Thermal Expansion	In/in deg F0.0000124	ASTM D696			
Flexural Modulus	1,200,000 psi	ASTM D790			
Di-electric Strength	400 V/ml	ASTM D149			
Volume Resistivity	1 x10 ⁻¹⁴ Ohm/cm	ASTM D257			

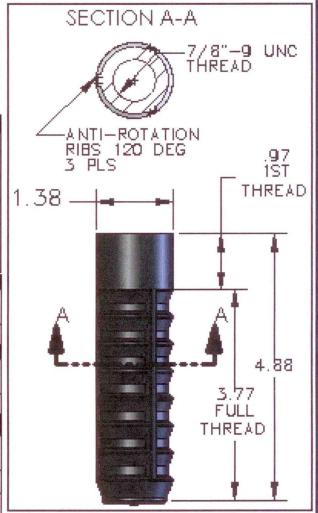
Unrestraine	d Values in Unre	inforced Concr	ete (Table 2)
Application (5,000 psi Concrete)	Emb. Depth (in.)	Tensile Strength	Failure Mode
Cast In-Place	4.875"	20,080 lbs	Concrete
	Restrained Val	ues (Table 3)	1
Application	Emb. Depth (in.)	Tensile Strength	Failure Mode
Cast In-Place	4.875	42,000 lbs	Insert Threads
	Bolt Torque Va	lues (Table 4)	

THE REAL PROPERTY.			Application is the state of the
Maximum Torque	Thread Engagement	Ultimate Value	Failure Mode
300 ft lbs	3.09"	600 ft lbs	Insert Threads

Values shown are with full thread engagement. Consult a PSG Fastener representative when using less than full thread engagement.

*Insert Material Data (Table 1) is acquired from raw material manufacturer and is generic to Nylon 6/6-33 compounds. PSG reserves the right to change raw material suppliers at its discretion. The raw material can vary slightly from manufacturer to manufacturer. Raw material properties will not exceed $\pm\,5\%$ of (Table 1) specifications.

Individual Test Reports are available upon request.



NOTE: InsulGuard® Inserts and Bolts are manufactured to specific design tolerances that adhere to tightly monitored quality control procedures. This attention to quality manufacturing allows the inserts and matching bolts to integrate and form an engineered anchoring system that provides consistent and predictable published performance values. In order to assure that these values are met, and to prevent unwanted decreases in anchor performance due to bolts that do not meet PSG's quality or application requirements, it is recommended that inserts and bolts be purchased from PSG Fastener as a set. PSG Fastener Division reserves the right to decline to supply Insul-Guard® products if inserts and bolts are not ordered as a set.

US Patents: 5,641,256 5,490,750 Others pending

Press-Seal Gasket Corporation Fastener Division

2424 W. State Blvd. Fort Wayne Indiana 46808

Phone: (800)625-6890 Fax: (603)880-4665 E-mail: psgfastener@press-seal.com

Web: www.press-seal.com/fastener

APPENDIX E – WELL CONSTRUCTION FORMS

1. CF-MW-1	19. BW-MW-7
2. CF-MW-2	20. BW-MW-8
3. CF-MW-3	21. CF-PZ-1
4. CF-MW-4	22. CF-PZ-2
5. CF-MW-5	23. CF-PZ-3
6. CF-MW-6	24. CF-PZ-4
7. CF-MW-7	25. BW-PZ-1
8. CF-MW-8	26. BW-PZ-2
9. CF-MW-9	27. BW-PZ-3
10. CF-MW-10	28. BW-PZ-4
11. CF-MW-11	29. BW-PZ-5
12. CF-MW-12	30. BW-PZ-6
13. BW-MW-1	31. BW-PZ-7
14. BW -MW-2	32. BW-PZ-8
15. BW -MW-3	33. MW 2
16. BW -MW-4	34. MW 8
17. BW -MW-5	35. MW 10
18. BW -MW-6	36. MW 11

New Jersey State Department of Environmental Protection Bureau of Water Systems and Well Permitting PO BOX 420 Trenton, NJ 08625-0420 Tel: 609-984-6831

Well Permit Number E201013862

MONITORING WELL RECORD

			MUNIT	UKUNG WE.	LL RECORD		
PROPERTY	OWNER: _	IRMA HOLDI	NG, LLC			4-8	
Company/Or	ganization:J]	RMA Holding,	LLC		7		
Address: 47	72 Barell Aven	ue Carlstadt, N	lew Jersey 070	72			
	-	entran / Velsico	Superfund Site	# # # # # # # # # # # # # # # # # # #	S	- 11-2-2-2-1	
Address: 3		8					
County: Be	rgen	_ Municipality	y: Wood-Ridge	e Boro	Lot: 10.02	Block: _22	
20.0			(Y): <u>731234</u> NAD83) - USF			FARTED: November PLETED: November	
WELL USE:	MONITOR	ING					
Other Use(s)):	*			Local ID: BV	V-MW-1	
WELL CON	STRUCTION	1					
Total Depth	Drilled (ft.):	12	Finished We	ell Depth (ft.):	12	Well Surface: Flus	h Mount
	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)		Material		g/Screen # Used s/ch no.)
Borehole	0	12	10	8-8-180-18-180-09W:			
Casing	0	2	2		PVC		Sch 40
Screen	2	12	2	So	ch 40 PVC		.010
	Depth to	Depth to	Outer	Inner		Material	
Grout	Top (ft.)	Bottom (ft.)	Diameter (in.)	Diameter (in)	Bentonite (lbs.)	Neat Cement (lbs.)	Water (gal.)
Gravel Pack	1	12	10	2	<u> </u>	Morie #1	
Grouting Met	thod: Gravity	method		Dri	lling Method: Holl	low Stem Augers	
Protective Ca Static Water I Water Level I Well Develop		elow land surfa <u>Tape</u> 1 hrs.	ce	Tot Dri Dri	np Capacity: _ gpm al Design Head: _ ft Iling Fluid: Il Rig: <u>Dingo</u> alth and Safety Plan		
ATTACHM	ENTS:						
GEOLOGIC	70						· · · · · · · · · · · · · · · · · · ·
		aded sands and	l gravelly sands	, little or no fine	s		
ADDITION	AL INFORM	ATION:			<u> 228-28</u> <u> </u>	<u> </u>	
Driller of Rec	Raymond Smith III, ENVIRONMENTAL PROBING Driller of Record: JOURNEYMAN LICENSE # 476697 Company: INVESTIGATION						

Well Perinit Number E 201013869

MONITORING WELL RECORD

Atlas Sheet Coordinates

OWNER DENTIFICATION PLA JEMA HOLDINGS Address 472 Racell Quenul						ordinates
Address 472 Barell Au City Carl Stadt	State New ?	ierse/		Zip Co	de 07072	•
WELL LOCATION - If not the same as or	WELL LOCATION - If not the same as owner please give address Owner's Well No. βいんしし					
County Bergen Municipality wood 2.dge Boro Lot No. 10.02 Block No. 229						
Address 3 Ettel Boulevard					•	
WELL USE monitoring		DAT	E WELL STA	RTED 1	1-2-10	
3		DAT	E WELL CO	MPLETE <u>D</u>	11-2-10	
WELL CONSTRUCTION	Note: Measure all depths	Depth to		Diameter	Material	Wgt./Ratin
Total Depth Drilled ft.	from land surface Single/Inner Casing	Top (ft.)	<u> </u>	(inches)	[(lbs/sch no
Finished Well Depth 12 ft.		0	2	2.n	Puc	30 0
Borehole Diameter:	Middle Casing (for triple cased wells only)		}	}	<u>.</u> 	
Top 8 in.	Outer Casing					
Bottom 8 in.	(largest diameter) Open Hole or Screen	<u> </u> 	<u> </u>	 	 	1
Well was finished:	(No. Used)	a	12	2:n	PUC	*A° 5c1 40
If finished above grade, casing height (stick up) above land surface _ 3 _ ft.	Blank Casings (No. Used)					
Steel protective casing installed?	Tail Piece					
Yes No	Gravel Pack		/2	8	Nort Comment	1100
Static Water Level after drilling 53 ft.	Grout	0.	 	∥ &	Neat Cement Bentonite	lbs lbs
Water Level was Measured Using _m SCC	ιρe		Grouting Meth	od POL	,r	
Well was developed for hours	•		Drilling Metho		s A	
at gpm				GEOLO	GIC LOG	
Method of development pump				re water was e	ncountered in consoli	dated
Pump Capacity gpi	n	ļ	rmations N-5- Sitt	x Kanad	into/	
Pump Type Uhaler pump	051		5-12- Silt		0410	
,	of Rig <u>R 80 mobil Dr</u>	111				
Health and Safety Plan Submitted? Yes Level of Protection used on site (circle one)	□No	, -				
Level of Protection used on site (circle one)	None (D) C B	^ _		· · · · · · · · · · · · · · · · · · ·		
				,		
				البساكي بالقريب الفريسة البخالات		
I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.						
Drilling Company S65 COV AS-BUILT WELL LOCATION						
Well Driller (Print) Thomas Lynch	 N.7	(NAD 83 HORIZONTAL DATUM) NJ STATE PLANE COORDINATE IN US SURVEY FEET				
Driller's Signature Thoma Lynch		ì				
Registration No. mw 435631	Date 2/4/1	INO	NORTHING: 731 132 EASTING: 608792			
		j		OR	·	
		LAT	TITUDE:0	· '	LONGITUDE:	· —— ·— ''

COPIES:

DRILLER

OWNER

HEALTH DEPARTMENT

, 3	New Jersey Department of I			١.	Well Permit N	umber
20 - KW	Bureau of Wate			E	2010138	84
BOMPED TO THE PROPERTY OF THE PARTY OF THE P	/ MONITORING W	ELL RE	CORD	7-	Atlas Sheet Coo	rdinates
OWNER IDENTIFICATION ///	7 The custor) THL	trust			<u> </u>
Address 232 West	Kd Al KED	Priv	خي ا		•• •	
City Chi Ching	State III	IN	025	Zip Co	de 60600	5
WELL LOCATION - If not the same as or	wner please give address	Ow	ner's Well N	o. BW	1 MW 3	
County Kepsel Municipal	lity Wood Rive			Block		
Address 3 Ethel	20.					
WELL USE MON Foning		DATI	E WELL STA	ል <mark>የ</mark> ተምከ	willy.	1
			E WELL CO		, 11 19 160	
WOLL CONCEDITORYON						
WELL CONSTRUCTION	Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Ratin (lbs/sch no
Total Depth Drilled ft.	Single/Inner Casing	12	e	2/1	DIIC	Ch
Finished Well Depth ft.	Middle Casing		<u> </u>			70
Borehole Diameter:	(for triple cased wells only)	<u></u>	}][L
Top in. Bottom in.	Outer Casing (largest diameter)				}	
Well was finished: Wabove grade	Open Hole or Screen		1	711	2.10	//-
flush mounted	(No. Used)	8	18	1	DUC	40
If finished above grade, casing height	Blank Casings (No. Used)				,	
(stick up) above land surfaceft.	Tail Piece][][<u> </u>][][!{	\ <u></u>
Steel protective casing installed?	Gravel Pack	10	78		#1-0016	11/17/
Yes No	Grout		7	e/	Neat Cement	9 4 lbs
Static Water Level after drilling ft.	<u></u>		D_{\perp}	<u>8</u>	Bentonite	lbs
Water Level was Measured Using	EUJ4	C	Frouting Meth	10d		
Well was developed for 15 hours	•	Ι	Orilling Metho	od		
at gpm	B			GEOLO	GIC LOG	
Method of development ///				ere water was e	ncountered in consolid	ated
Pump Capacity gp	m	for	mations		/ .	
Pump Type	n es.		00	F	//	
	of Rig BSUMOB,	\mathcal{L}	p 16	011	11175	
Health and Safety Plan Submitted? Wes	∐No ∡)		5 7 7			
Level of Protection used on site (circle one)	None CD C B	A			·· ·- · · · · · · · · · · · · · · · · ·	
		-	······································			
•					- <u> </u>	
I certify that I have constructed the above re						
accordance with all well permit requirement rules and regulations.	nts and applicable State			,		
Drilling Company	1		AS-B	UILT WE	LL LOCATION	
Well Driller (Print)	1				ONTAL DATUM)
Driller's Signature	<u>u</u>	NJ	I STATE PLA	NE COORD	INATE IN US SUF	VEY FEET
Registration No.	Data 2 111 1	NO	rthing:Z	30986	_ EASTING:	18838
1560	Date 2 1/6/ /	' }	-	OR		V-V-
		LAT	TTUDE: 0	F 1	LONGITUDE:	, ,
ORIGINAL: DEP	COPIES: DRILLI		OWNE	D	HEALTH DE	DADTRATION
	وراز المراز المر	.r.c.t.	OFF INE	C.R.		a raaka 193 <i>1</i> 217.

OWNER

MONITORING WELL RECORD

59010	75 <u>2</u> 27	
Atla	s Sheet Co	oordinates

OWNER IDENTIFICATION NA THE FIL CUSTODIAL trust	· ·					
Address 333 West wacker Drive						
City Chicago State Illinois Zip Code 60606						
WELL LOCATION - If not the same as owner please give address Owner's Well No. 25-mw-4						
County Bergen Municipality wood Ridge Lot No. 8 Block No. 229						
Address 3 Ethel Boulevard						
DATE WELL STARTED 11-4-10 DATE WELL COMPLETED 11-4-10						
from land surface Top (ft) Rottom (ft) (inches)	Vgt./Ratin lbs/sch no					
1 Olai Depui Dillieu (- 1) ([Sth 40					
Porchale Dismeter: Middle Casing						
(for triple cased wells only)	=====					
Bottom Bottom (largest diameter)						
Well was finished: Dabove grade Open Hole or Screen (No. Used) 4 14 2in Puc	sen 40 180					
If finished above grade, casing height (No. Used) (Stick up) above land surface 3 ft.						
Steel protective easing installed?						
Yes No Gravel Pack 7 14 758 41 Sano						
Static Water Level after drilling 5 ft. Grout Gro	lbs lbs					
Water Level was Measured Using m Scope Grouting Method 195 pour	_:_:_:					
Well was developed for hours Drilling Method						
at 1 gpm GEOLOGIC LOG						
Method of development Pump Note each depth where water was encountered in consolidate.						
Pump Capacity gpm formations						
Pump Type Waler pump O-8 Fill Silty Sand water						
Drilling Fluid N/A Type of Rig B 80 mobil Drill 8-12 Silty - Sand						
Health and Safety Plan Submitted? Ves No						
Level of Protection used on site (circle one) None (D) C B A						
I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.						
Drilling Company SGS COV AS-BUILT WELL LOCATION						
Well Driller (Print) Thomas Lynch (NAD 83 HORIZONTAL DATUM)						
Driller's Signature Thoma Lynch NJ STATE PLANE COORDINATE IN US SURVI	NJ STATE PLANE COORDINATE IN US SURVEY FEET					
Registration No. mv 435631 Date a / 4/11 NORTHING: 230835. EASTING 109	5741					
OR						
LATITUDE: 0 LONGITUDE: 0						

COPIES:

DRILLER

OWNER

HEALTH DEPARTMENT

BW MWS

New Jersey Department of Environmental Protection Bureau of Water Allocation

Well Permit Number

	~~~~~	
E2010	13	RAI
		<del>- 0 0</del>

HEALTH DEPARTMENT

	MONITORING W	ELL RI	CORD		Atlas Sheet Cod	ordinates	
OWNER IDENTIFICATION	V/4 T/20 /	rusti	DIAL	- 700	r of	¥	
Address 332 11 W	Ackon Da						
City ChiChso	State	Lia	015	Zip Co	de 6060	16	
WELL LOCATION - If not the same as ow	vner please give address	On	vner's Well N	o. KIN	MWS		
County Kersen/ Municipali	ty MIDOD Rid		Lot No. 🖌				
Address 3 8 th of B/O	/		_				
WELL USE	8		E WELL STA		11/18/10	o	
WELL CONSTRUCTION	Note: Measure all depths	Depth to	Depth to	Diameter	Material	Wgt./Ratir	
Total Depth Drilled /7 / ft.	from land surface	Top (ft.)	Bottom (ft.)	(inches)	212-70-141	(lbs/sch nc	
Finished Well Depth ft.	Single/Inner Casing			2"	Duc	506 4	
Borehole Diameter:	Middle Casing	<del></del>					
- 1 ·	(for triple cased wells only)	 	<u> </u>	[		<u> </u>	
Bottom in.	Outer Casing (largest diameter)	<u> </u> 	] }	,	<u> </u>		
Well was finished: Tabove grade  flush mounted	Open Hole or Screen (No. Used 12/4)	2	12	711	PIC	sch.	
If finished above grade, casing height (stick up) above land surface 7 ft.	Blank Casings (No. Used 20 L )	2					
	Tail Piece				[		
Steel protective casing installed? Yes No	Gravel Pack		12.	12	IF 1		
Static Water Level after drilling ft.	Grout	12.	1	12	Neat Cement Bentonite	1b:	
Water Level was Measured Using MCC	· ADC		JL	JL			
Well was developed for hours			Grouting Meth		Tacity		
at / gpm	Λ	<u> </u>	Drilling Metho		<u> </u>		
Method of development	Dius	-	······································		GIC LOG		
Pump Capacity 7,1 gpr	n Torige		Note each depth where water was encountered in consolidated formations				
Pump Type What has D	•				·		
Drilling Fluid // Type o	fRig	07/	,0-	5 Fi	$I_{}$		
Health and Safety Plan Submitted? Yes		-	<u> </u>	2. Spin,	DS		
Level of Protection used on site (circle one)	None \( \overline{D} \) C B	A $-$				<del> </del>	
Estat of Transaction asset on site (entitle site)	Trong G B	^   -		· · · · · · · · · · · · · · · · · · ·		<b>**</b>	
	_	-					
				ساندي القصيدة كالساندي	· · · · · · · · · · · · · · · · · · ·		
I certify that I have constructed the above reaccordance with all well permit requirement rules and regulations.	ferenced well in ts and applicable State			,			
Drilling Company GGS		\	AS-B	UILT WEI	L LOCATION		
Well Driller (Print)	12 4°			<del></del>	ONTAL DATUM	<del></del>	
Driller's Signature	-	N.	I STATE PLA	NE COORD	INATE IN US SUI	XVEY FEET	
NORTHING: 1/1) P. Y. Y. FASTING: 616CC				08557,4			
/500	Date _2_/4/_//	}	, ,	OR			
		) T A T	TTUDE: 0		LONGITUDE:	o †	
		i Dur	~~ ~~ ~~		TOTACET ORDE		

COPIES:

DRILLER

OWNER

## New Jersey Department of Environmental Protection

Well Permit Number

	Bureau of Water Allocation			£201013870		
	MONITORING W		<del></del>		Atlas Sheet Coo	
OWNER IDENTIFICATION N/A TANGENT 472 Barell A	RMA Holdings				·	<del></del>
Address 472 Borell A	venue			·	· · · · · · · · · · · · · · · · · · ·	
City <u>CarlStadt</u>	State New	Jerse	Ý	Zip Co	de <u>0707</u> 2	
WELL LOCATION - If not the same as or	wner please give address	Ow	vner's Well N	o. Bw M	1w-6	
County <u>Bergen</u> Municipal						
Address 3 Fthel Bouleva	rd ,		_			
WELLUSE Monitoring	,	DATI	E WELL STA	ATTED (	1-1-14	
	<del></del>	DAT			11-10-10	
						) r====================================
WELL CONSTRUCTION	Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Ratin (lbs/sch no
Total Depth Drilled 12 ft.	Single/Inner Casing	O	1 2	2in	PUL	5ch 40
Finished Well Depth 12 ft.	Middle Casing					
Borehole Diameter:	(for triple cased wells only)	<u> </u>		]		][
Top <u> </u>	Outer Casing (largest diameter)					
Well was finished: Mabove grade	Open Hole or Screen			)[] ][]		
flush mounted	(No. Used )	2	12	2in	PVC	To
If finished above grade, casing height (stick up) above land surface 3 ft.	Blank Casings (No. Used )				·.	
Steel protective casing installed?	Tail Piece					<u> </u>
Yes No	Gravel Pack Grout		12	8:4	井 I Sand Neat Cement	lbs
Static Water Level after drilling 5 ft.	Grout	<b>6</b> 9.	/	8:0	Bentonite	
Water Level was Measured UsingS(	290	(	Grouting Meth	od Pour		<u> </u>
Well was developed for hours			Orilling Metho			
at gpm			<del> </del>	GEOLO	GIC LOG	
Method of development Pump			Note each depth where water was encountered in consolidated			
Pump Capacity gp	m	for	formations  0-5 Fill Silt water			
Pump Type whater	13	3-12 5:14y - Sand				
	of Rig beo Probe	-   -				
Health and Safety Plan Submitted? Yes	∐No					
Level of Protection used on site (circle one)	None (D) C B	A			ما ورد المورد	
I certify that I have constructed the above re accordance with all well permit requiremen	eferenced well in		<del></del>			
rules and regulations.	ы ана аррисание мане			· · · · · · · · · · · · · · · · · · ·		
Drilling Company _ S. L. S. EAV			AS-B	UILT WEI	L LOCATION	

ORIGINAL: DEP

Well Driller (Print)

Driller's Signature

Registration No.

MW 435 631

COPIES:

Date

DRILLER

OWNER

NORTHING: 730904

(NAD 83 HORIZONTAL DATUM)

OR

NJ STATE PLANE COORDINATE IN US SURVEY FEET

"LONGITUDE:

HEALTH DEPARTMENT

EASTING: 608479

# New Jersey Department of Environmental Protection

Bureau of Water Allocation					
MONITORING WELL RECORD					

Well Perinit Number EQUIDI3877

OWNER IDENTIFICATION N/A OF	VE Ethel Bolal	Evard			Atlas Sneet Co	ordinates	
Address 1 Ethel BouleyAr					· <del>. · · · · · · · · · · · · · · · · · · </del>	<del></del>	
City Wood Ridge		Jersei	1	Zip Co	de 07075	•	
WELL LOCATION - If not the same as ov	vner please give address	Ow	ı mer's Well N	o. BW-1	mw-7		
County Bergen Municipal	ity Wood-Ridge &	010	Lot No. 10.	O.I Block	k No. 229		
Address 3 Ethel Boulevard	\	· 	· 		·		
WELL USE Monitoring		DATI	E WELL STA	RTED :	11/5/12		
3			E WELL CO				
WELL CONSTRUCTION	Note: Measure all depths	Depth to	Depth to	Diameter	Material	Wgt./Ratir	
Total Depth Drilledft.	from land surface	Top (ft.)	Bottom (ft.)	(inches)	Material	(lbs/sch no	
Finished Well Depth 12 ft.	Single/Inner Casing	O	7	2	Puc	schyo	
Borehole Diameter:	Middle Casing						
Topg in.	(for triple cased wells only)  Outer Casing	 	 		)  	] 	
Bottom8 in.	(largest diameter)	}  L	]		}	]	
Well was finished: above grade	Open Hole or Screen (No. Used 20 50t)	2	12	2	PVC	Sch40	
Thush mounted	Blank Casings	<u> </u>		-	 	30,70	
If finished above grade, casing height (stick up) above land surface NA ft.	(No. Used )				\\\		
Steel protective casing installed?	Tail Piece	 			C. I P   W	<u> </u>	
Yes No	Gravel Pack Grout		12	8	F:   Po#   Neat Cement	400 (b.)	
Static Water Level after drilling 5 ft.	<u> </u>	0	1	රී	Bentonite	<b>7.5</b> lbs	
Water Level was Measured Using 15cc	PE		Brouting Meth	od <u>6.64</u>	avity		
Well was developed for 1 hours	•		Orilling Metho	d <u>HSA</u>	· 		
at gpm  Method of development				GEOLO	GIC LOG		
Method of development Pump Capacity 2.5 gpi			e each depth whe	re water was e	ncountered in consoli	lated	
Pump Type Whale	11	l l	-5 Fill		·		
	fRig 7720DTbee	Prope 5	5-7 Gray Clay				
Health and Safety Plan Submitted? TYes	□No		-10 Find -12 (-19)	Orange			
Level of Protection used on site (circle one)	None ወ C B	A					
		}					
					· <del></del>		
I certify that I have constructed the above re	ferenced well in						
accordance with all well permit requirement rules and regulations.	ts and applicable State			,			
Drilling Company S 6 5			AS-B	UILT WE	LL LOCATION	<del></del>	
Well Delle on the Total O	usa	ļ 			ONTAL DATUM	<del></del>	
Driller's Signature Sellem Raw		j			INATE IN US SU		
Registration No. 700020129	Date ///5/10	NO	RTHING: 7.	31086	LEASTING: 6	08429.	
				OR			
		LAT	ITUDE: 0	· · · · ·	LONGITUDE:	0 t 11	

COPIES:

DRILLER

OWNER

HEALTH DEPARTMENT

•	W	ell'	Permit	Numl	bε
_					

#### MONITORING WELL RECORD

=	<u>~∪i∪</u>	38	15		
	Atla	s She	et C	oordi	inates

OWNER IDENTIFICATION NA	ONE ETHEL BOY	Leva	rD		·	<u> </u>	
Address Ethel Bou	leunod						
City Wood Ridge	State <u>Νεω</u>	Jerse	4	Zíp C	ode <u>07075</u>	•	
WELL LOCATION - If not the same as or			ner's Well N		,		
County Bergen Municipal							
Address 3 Ethel Boyleva	ind / ventron / ve	Isicol	Super Fur	nd 5: Te	٤ '		
WELL USE Monitoring			E WELL STA				
			E WELL CO				
WELL CONSTRUCTION	Note: Measure all depths	Depth to	Depth to	Diameter	Material	Wgt./Ratir	
Total Depth Drilled 12 ft.	from land surface	Top (ft.)	Bottom (ft.)	(inches)	IVIALETIAL	(lbs/sch no	
Finished Well Depth 12 ft.	Single/Inner Casing	0	2	2	PVL	Sch 4/6	
Borehole Diameter:	Middle Casing (for triple cased wells only)						
Top <u>\$</u> in.	Outer Casing	<u> </u>			<u> </u>	\ <del></del>	
Bottom in.	(largest diameter)	   <u> </u>				]	
Well was finished: above grade Tilush mounted	Open Hole or Screen (No. Used 205)	٦	19-	J	PUC	sch 40	
If finished above grade, casing height	Blank Casings						
(stick up) above land surface NA ft.	(No. Used )	 		<u> </u>	<u> </u>		
Steel protective casing installed?	Tail Piece Gravel Pack	] }	12	8	fil fro # 1	400 11	
Yes No	Grout	<u>-</u>	10-	<u> </u>	Neat Cement	50 lbs	
Static Water Level after drilling 5 ft.		0	]	8	Bentonite	2.5 lbs	
Water Level was Measured Using msce	<u>ૄ</u> ૡ	C	Frouting Meth		ivity		
Well was developed for 1 hours	•	I	orilling Metho	d HS	A `		
at gpm				GEOLO	GIC LOG		
Method of development Submusable			e each depth whe	ere water was	encountered in consolic	lated	
Pump Capacity 2.5 gp. Pump Type Whate	m	l l	-5 F: 11				
	(D) 0 1 0	- Te-	-7 GrAG	clay	<del> </del>		
	of Rig <u>772 oT 600k</u>	احملافا	7-10 Fine Orange Sand				
Health and Safety Plan Submitted? Yes	∐No	<u> </u>	17 6101	4 Fines	sand		
Level of Protection used on site (circle one)	None 🛈 C B	$A \mid -$			·		
			······································	, , , , , , , , , , , , , , , , , , ,			
·							
I certify that I have constructed the above re accordance with all well permit requiremen	eferenced well in its and applicable State						
rules and regulations.		<u> </u>	AS R	TITI TO XXXV	LL LOCATION	<del></del>	
Drilling Company SGS		}			ONTAL DATUM	)	
Well Driller (Print) Jeffery Rau		NJ	<del></del>		DINATE IN US SUI		
Driller's Signature July Racistration No.		NOI	RTHING: 7	3123	7 EASTING:6	08540	
Registration No. 250020129	Date <u>j1/5/10</u>		<b></b>	OR			
NJ 7886		LAT	TUDE: 0	,	"LONGITUDE: '	o ' "	
ORIGINAL: DEP	COPIES DRILLE	 ?P	OWNE	?		יינו או או או איני או או פיני	

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OWNER

	Well Permit Number
Ea	101013887

#### MONITORING WELL RECORD

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Atlan	Chast	Canadinates

	MOME OMING W				Atlas Sheet Coo	ordinates
OWNER IDENTIFICATION N/A	the FTL custo	obial_	trust	<del></del>	<del></del>	<del></del>
Address 333 west we	acker Drive	, · ≖			<u> </u>	
City Chicago	State Aser	Ar26.	<b>Dllinois</b>	Zip Co	ode <u>60606</u>	
WELL LOCATION - If not the same as or	wner please give address	Ом	ner's Well N	o. Bw-	PZ-\	
County Regen Municipal	lity wood Ridge I	8010	Lot No8	Bloc	k No. <u>229</u>	
Address 3 Ethel Boulervar	·d		· -		•	
WELL USE monitoring		DAT	E WELL STA	ARTED	11-5-10	
MOTORMA		DAT		_	11-5-10	
	·					,
WELL CONSTRUCTION	Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Ratii (Ibs/sch nc
Total Depth Drilled 12 ft.	Single/Inner Casing	0	2	خصينا		
Finished Well Depth 12 ft.	Middle Casing			Hin	Stain less	<u>}</u>
Borehole Diameter:	(for triple cased wells only)	  }	<b>.</b> .		<u>]</u>	
Top /e in. Bottom /o in.	Outer Casing					
	(largest diameter)  Open Hole or Screen	<u> </u>	) } }	<u> </u>	/( 	\\
Well was finished: above grade flush mounted	(No. Used )	2	12	14in	Stain less	.20 5
If finished above grade, casing height	Blank Casings					
(stick up) above land surfaceft.	(No. Used )	\ <u></u>	<u> </u>		\ 	<del> </del>
Steel protective casing installed?	Tail Piece	<u> </u>	12			<u> </u>
Yes No	Gravel Pack Grout	<u> </u>	1 1 0	10	Neat Cement	)\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
Static Water Level after drilling 5 ft.		0		10	Bentonite	Ib:
Water Level was Measured UsingSC	ope	C	3routing Meth	.od		
Well was developed for hours	•	I	Orilling Metho	od		
at gpm			<del></del>	GEOLO	GIC LOG	
Method of development Pump				re water was	encountered in consolic	lated
Pump Capacity gp.	m	Į	nations <u>-S Fill-S</u>	: Hunnal	9 .F	
Pump Type whaler pum?		~	-12·5il	. /		
,	of Rig B 80 mobil I	2011		7		
Health and Safety Plan Submitted? Yes Level of Protection used on site (circle one)	□No	<u>,  </u>				<del></del>
Level of Frotection used on site (circle one)	None (D) C B	A -	· · · · · · · · · · · · · · · · · · ·			
I certify that I have constructed the above re accordance with all well permit requiremen rules and regulations.		00000000		,		
Drilling Company SGS ENU			AS-B	UILT WE	LL LOCATION	<del></del>
Well Driller (Print) Thomas Lynch	<del>``</del>		(NAD 8	3 HORIZ	ONTAL DATUM	)
Driller's Signature Thomas Lynch		NJ	STATE PLA	NE COORI	DINATE IN US SUI	RVEY FEET
Registration No. mw 435631	Date 2/4/11	NO	RTHING:_}	3221	_ EASTING:	<u> 1 7980</u>
711W -77 5627	Date 0/7/11	}		OR		
		LAT	ITUDE: 0	•	"LONGITUDE:	o †
		1		'	· · · · · · · · · · · · · · · · · · ·	

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DRILLER

OWNER

Well Permit Number E201013872

#### MONITORING WELL RECORD

Atlas Sheet Coordinates

OWNER IDENTIFICATION N/A 3/	RMA Holdings				·	ordinates 
Address 472 Barell Aven	ue <u> </u>	· .				
Address 472 Barell Aven City Carlstadt	State	zers	ey	Zip Co	ode <u>67072</u>	•
WELL LOCATION - If not the same as ov	O	wner's Well N	0. 13W-P	7-2		
County Bergen Municipality wood Ridge			Lot No. 10	oa Bloc	k No. 229	
Address 3 15thel Baylevard			_			
•		<u> ጉ</u> ላፕ	— E WELL STA	. ውጥኮጥ	11.7-10	
WELL USE monitoring	<del></del>	DAT	E WELL CO			
	·	DAI	E WELL CO	MXTETE	11-2-10	
WELL CONSTRUCTION	Note: Measure all depths from land surface	Depth to Top (ft.)		Diameter (inches)		Wgt./Ratir (lbs/sch no
Total Depth Drilled 12 ft.	Single/Inner Casing		2	المستحسنا	K	105/501/10
Finished Well Depth 12 ft.	L	0	J &	4	*wePuc	 
Borehole Diameter:	Middle Casing (for triple cased wells only)			<u> </u>	<b>  </b> -	
Top	Outer Casing		 	)] }	) )	
Bottom in.	(largest diameter)	<u> </u>	<u> </u>	<u>  </u>	<u>                                     </u>	<u> </u>
Well was finished: above grade	Open Hole or Screen (No. Used )	2	12	4	Stain less	.20
If finished above grade, casing height (stick up) above land surface ft.	Blank Casings (No. Used )					
<del></del>	Tail Piece					,
Steel protective casing installed?  Yes You	Gravel Pack		12	10		
Static Water Level after drilling 3 ft.	Grout	0	i	10	Neat Cement Bentonite	lbs
Water Level was Measured Using _m Sco	L	ــــــــــــــــــــــــــــــــــــــ		ــــــــــــــــــــــــــــــــــــــ		
Well was developed for / hours	fc .		Grouting Meth		· — <del>- · — · — · — · — · — · — · — · — · — · </del>	
at gpm		<del></del> -	Drilling Metho		<del></del>	
Method of development Pump		<u> </u>	<del> </del>		GIC LOG	
Pump Capacity gpi	m		ote each depth who mations	ere water was e	encountered in consolie	iated
Pump Type whater pane		ے ا	3-5 Silt	y sand	water	
, , , , , , , , , , , , , , , , , , , ,	of Rig Mobil Drill B	80 3	5-12 Sil	ty Sand	1	
Health and Safety Plan Submitted? Yes	□No	<u> </u>		f		
Level of Protection used on site (circle one)	~	$_{\rm A}$		_		<del></del>
. (						
		_				
			· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	····	
I certify that I have constructed the above re accordance with all well permit requirementules and regulations.				,		
Drilling Company SGS Env			AS-B	UILT WE	LL LOCATION	<del></del>
Well Driller (Print) Thomas Lync		ļ	(NAD	83 HORIZ	ONTAL DATUM	[)
Driller's Signature Thoma Lynch		N	J STATE PLA	NE COORL	INATE IN US SU	RVEY FEET
Registration No. mw 43 563		NO	RTHING: 3	31192	_ EASTING: <u>(</u>	08 785
17100 75 3051	Date <u>2/4/11</u>			OR		. –
		Υ.ΔΤ	TITUDE: 0	ŧ	"LONGITUDE:	0 ' "
	•	ER	OWNE		HEALTH DI	

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OWNER

Well Permit	Number
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#### MONITORING WELL RECORD

ř.	2010	1288	<u>77</u>	 
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	A 41.	a - Ot	-+ C-	 

	MONITORING IV				Atlas Sheet Coo	ordinates	
OWNER IDENTIFICATION N/A	THE FIL Cust	obial	Trust	<del></del>	····	<del></del>	
Address 333 west wac	Ker Drive.	· ·		<del></del>	· · · · · · · · · · · · · · · · · · ·		
City Chicago	State Tllin	oi S		Zip Co	ode 60606		
WELL LOCATION - If not the same as or						•	
County <u>Bergen</u> Municipal	ity 1000 Ridge i	Soro	_Lot No. 🤰	Bloc	k No. 229		
Address 3 Ethel Rouleward	<b>J</b>		· 		•		
WELL LISE MAN 14 TO S		DATE	— HR NATER E COLA	משימינו	11 7 10		
WELL USEmonitoring_		DAT	E WELL STA		11-3-10		
-	•	DAI	E WELL CO.	MLTEIET	11:2-10		
WELL CONSTRUCTION	Note: Measure all depths	Depth to		Diameter	Material	Wgt./Ratir	
Total Depth Drilled 14 ft.	from land surface	Top (ft.)	<del></del>	(inches)	) 	(lbs/sch nc	
Finished Well Depth 14 ft.	Single/Inner Casing	0	4	4in	Puc	sch 40	
Borehole Diameter:	Middle Casing (for triple cased wells only)	Į		}	<b> </b>  -		
Top <u>10</u> in.	Outer Casing	 	╣ <u></u>	<u> </u>	} }		
Bottom 16 in.	(largest diameter)	]	<u> </u>		<u> </u>	]	
Well was finished: above grade	Open Hole or Screen (No. Used )	4	14	Hin	Stain less	.2056+	
If finished above grade, casing height (stick up) above land surface ft.	Blank Casings (No. Used )		·				
<del></del>	Tail Piece						
Steel protective casing installed?  Yes You No	Gravel Pack	3	14	10			
Static Water Level after drilling 3 ft.	Grout	0	3	10	Neat Cement Bentonite	lbs lbs	
Water Level was Measured Using _m SCc		][		ـــــالـ	JL		
Well was developed for hours	4°C		Grouting Method Pour  Drilling Method HSA				
at gpm		ــــــــــــــــــــــــــــــــــــــ	Dining Menio	-4-24	<del></del>		
Method of development Pam?					GIC LOG		
Pump Capacitygpi	m	for	mations		encountered in consolic	•	
Pump Type Whater pump		e	\$ 6-5	Fill-	Silty Sand	<i>wife</i>	
	of Rig MORIL OFILL B	RO   -	<u>5-14 S</u>	114-3	San D		
Health and Safety Plan Submitted? WYes	□No	_   _					
Level of Protection used on site (circle one)	— A	A -			<del></del>		
	•						
		.		·			
Lacetify that I have constructed the above	-f			<del> </del>			
I certify that I have constructed the above re accordance with all well permit requiremen		-					
rules and regulations.		ļ	40 D	Y	T T OCH TOOM		
Drilling Company SLS					LL LOCATION ONTAL DATUM	1	
Well Driller (Print) Thomas Lynch	<u> </u>	N			DINATE IN US SUI		
Driller's Signature Thomasynik		- 1			EASTING: ()		
Registration No. ww 435631	Date <u>2/4/11</u>	1.40	~~			<u>~9.1.10</u>	
				OR			
		LAT	TITUDE:0_	'	"LONGITUDE:	o ' "	
ORIGINAL: DEP	COPIES: DRILLE	ER	OWNE	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	HEALTH DE	PARTMENT	

	Well Permit Number
<b>=</b> :	201013888

	MONITORING W	ELL I	RECORD		Atlas Sheet Coo	ordinates
OWNER IDENTIFICATION NA TH	e FTL custodia	1_10	ust.		·	<u> </u>
Address 333 west wach				·		
City <u>Chicago</u>					de 60606	,
WELL LOCATION - If not the same as or	vner please give address	(	) Wner's Well N	n. RW-P	z-4	
County Bergen Municipal						
Address 3 Ethel Boulevar				<u> </u>		
WELL USE _monitoring.		DA	TE WELL STA	RTED _	11-3-10	
J	•	DA	TE WELL CO	MPLETED	11-3-10	
WELL CONSTRUCTION	Note: Measure all depths from land surface	Depth t		Diameter (inches)	Material	Wgt./Ratir (lbs/sch no
Total Depth Drilled $\frac{1}{2}$ ft.	Single/Inner Casing	6	2	Hin	PVC	\ <del></del>
Finished Well Depth 12 ft.	Middle Casing			7111	100	6ch 40
Borehole Diameter:	(for triple cased wells only)		}}	<u> </u>	i - 	
Top $\frac{/O}{IO}$ in. Bottom $\frac{IO}{IO}$ in.	Outer Casing (largest diameter)					
Well was finished: above grade  flush mounted	Open Hole or Screen (No. Used )	2	12	Hin	Stain less	20
If finished above grade, casing height (stick up) above land surface ft.	Blank Casings (No. Used )		·			
<del></del>	Tail Piece					
Steel protective casing installed?  Yes No	Gravel Pack		<u>a</u>	10		
Static Water Level after drilling 3 ft.	Grout	0	I	10	Neat Cement Bentonite	lbs lbs
Water Level was Measured Using m SC	1	JL	Granting Math	.d. 200	JL	
Well was developed for hours	- ;		Grouting Meth Drilling Metho			·
at gpm				GEOLOGIC LOG		
Method of development Pump		\	Note each depth whe		ncountered in consolid	ated
Pump Capacity gpi	m		formations	to water was c	Accountaged in Consond	ator
Pump Type whaler pump		-	OS Fill		and water	
Drilling Fluid $\nu/\eta$ Type of	of Rig mobil Brill B	80 -	5-12 511·	tys so	and	
Health and Safety Plan Submitted? Yes	□No	-	· · · _ · _ · _ · _ · _ ·		<del></del>	
Level of Protection used on site (circle one)	None (D) C B	A				
		}				
		.   -			\$ \$	
I certify that I have constructed the above re accordance with all well permit requiremen						
rules and regulations.  Drilling Company S6S env		F	ASJR	UILT WEI	LL LOCATION	
	<del></del>	}			ONTAL DATUM	)
			NJ STATE PLAI	NE COORD	INATE IN US SUE	RVEY FEET
Driller's Signature Thomas Lyne Registration No.		N	ORTHING: 子	3068?	easting:	787cn
Registration No. <u>mw435631</u>	Date <u>2/4/1</u>	}		OR	رپيندس	
		L	ATITUDE: 0	r r	LONGITUDE:	) † .

OWNER

	Well Permit Number
Ε	201013873

#### MONITORING WELL RECORD

			٦
Atlac	Sheet	Coordinates	

OWNER IDENTIFICATION 2/9 5	RMA HOLDINGS					Atias Sheet Coo	rdinates
Address 472 Barell Ave	nue .	· 	·			<u> </u>	
City <u>Carlstadt</u>	State New	Jer	<u>se</u>	Y	Zip Co	de <u>0707</u> 2	
WELL LOCATION - If not the same as or	vner please give address		Ow	ner's Well N	0. <u>  BW-1</u>	2-5	
County Bergen Municipal							
Address 3 Ethel Boulevard						•	
WELL USE monitoring		1	ATI	E WELL STA	RTED _	11-10-10	
J	,	I	ATI	E WELL CO	MPLETED	11-10-10	
WELL CONSTRUCTION	Note: Measure all depths	Dept		Depth to	Diameter	Material	Wgt./Ratir
Total Depth Drilled $12$ ft.	from land surface	Top	لينت	Bottom (ft.)	(inches)		(lbs/sch nc
Finished Well Depth 12 ft.	Single/Inner Casing	0		2	4.0	"Mystain less	
Borehole Diameter:	Middle Casing (for triple cased wells only)		ĺ	]	[ ]	-	j
Top	Outer Casing					<del></del>	
Bottom 18 in.	(largest diameter)	<u></u>			<u> </u>		
Well was finished: ☑ above grade ☐ flush mounted	Open Hole or Screen (No. Used )	1	•	12	4in	stainless	€ 3kg
If finished above grade, casing height	Blank Casings						
(stick up) above land surface 2 ft.	(No. Used )	) <u> </u>		<u> </u> 	 	 	 
Steel protective casing installed?	Tail Piece Gravel Pack	}{ } }	====	1		] }	
Yes No	Grout		<del></del>	<u>                                    </u>	<u>                                    </u>	Neat Cement	lb:
Static Water Level after drilling 5 ft.		[	). 		<u> </u>	Bentonite	lb:
Water Level was Measured Using 500	ge.		G	routing Meth		ur	
Well was developed for hours	·		D	rilling Metho	d <u>1+</u>	s:A	
at 1 gpm  Method of development Pump					GEOLO	GIC LOG	
				e each depth whe	re water was e	ncountered in consolid	ated
Pump Capacity gpi Pump Type whale Pump	111		0-5 Fill - Sand water				
\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	of Rig R 80-07		5-12 5ilty-Sand				
Health and Safety Plan Submitted? Yes	$\square$ No			· · · · · · · · · · · · · · · · · · ·			<del></del>
Level of Protection used on site (circle one)	None (D) C B	A					······································
	0	- 11	سيدم				
				····			
I contife that I have constructed the -have	-C		~~				<del></del>
I certify that I have constructed the above re accordance with all well permit requiremen rules and regulations.							
Drilling Company 36Senv		ì				LL LOCATION	
Well Driller (Print) Thomas Lync	h		AT Y			ONTAL DATUM	<del></del>
Driller's Signature Thomas Lynch		i		_		INATE IN US SUR	
Registration No. mw 435631	Date 2/4/11		NOI	KTHING: 1	50576	EASTING: 60	D5746
		ļ			OR		
		ļ	LATI	TUDE:0_	·	LONGITUDE: 0	

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OWNER

HEALTH DEPARTMENT

- 4" of 6"	New Jersey Department of E Bureau of Wate				Well Permit N	Jumber	
1273 XL	MONITORING W				-20101	387	
owner identification //	1/n 4h P	11/2	L10	Frant	Atlas Sheet Coo	ordinates	
Address $\frac{1}{2}$	THE STATE OF THE S	25/0	V ICEV	11051	<del> </del>		
City Chi' Cana (1	State T.C.	14 [0 6] 5	<u></u>	Zin Co	de 606 0	<u>(</u>	
- In				<del></del> -		<i>u</i>	
WELL LOCATION - If not the same as or	, , ,	1 .	ner's Well N	. //	_	•	
County Sergan Municipal	ity Wood K	1098	Lot No	Bloc	k No		
Address Nontracture			-		<i>[</i> }		
WELL USE		DAT	E WELL STA	ARTED _	-11/6/1C	)	
		DAT	E WELL CO	MPLETED	1-6-19	)	
WELL CONSTRUCTION	Note: Measure all depths	Depth to	Depth to	Diameter	Material	Wgt./Ratin	
Total Depth Drilledft.	from land surface	Top (ft.)	Bottom (ft.)	(inches)		(lbs/sch nc	
Finished Well Depthft.	Single/Inner Casing	0	2	41'	Stain /car	40	
Borehole Diameter:	Middle Casing (for triple cased wells only)			,	<u> </u>		
Top	Outer Casing	<u> </u>	<u> </u>				
Bottomin.	(largest diameter)	 		<u> </u>			
Well was finished: ☐ above grade ☐ above grade	Open Hole or Screen (No. Used )	2	12'	411	Stanles	40	
If finished above grade, casing height (stick up) above land surface ft.	Blank Casings (No. Used )						
	Tail Piece						
Steel protective casing installed?  Yes ZNo _	Gravel Pack		12	120	红し	400	
Static Water Level after drilling 3 ft.	Grout	0	1	12'	Neat Cement Bentonite	lb.	
Water Level was Measured Using ///	01105	ــــــــــــــــــــــــــــــــــــــ	Frouting Meth		May 4		
Well was developed for hours			Orilling Metho		1/5h		
at _/_ gpm			GEOLOGIC LOG				
Method of development / Ump		Not	e each denth whe		encountered in consolic	iated	
Pump Capacity 2 gp	m		nations	as Hator Has v	and district of the ownstate		
Pump Type Whyla	~~			- 6 17	<del></del>		
Drilling Fluid Type of	of Rig 857 MOST	12 -	<u> ۲ سر</u>		<u>,                                    </u>		
Health and Safety Plan Submitted? 🔼 Yes	∐No →		<del></del>		<u> </u>		
Level of Protection used on site (circle one)	None C B	A					
				•	**************************************	<u> </u>	
					· · · · · · · · · · · · · · · · · · ·		
I certify that I have constructed the above re	eferenced well in						
accordance with all well permit requiremen	ts and applicable State			1			
rules and regulations.	·)		AS-B	IIII.T WE	LLLOCATION		
Drilling Company  Wall Drillor (Print)			AS-BUILT WELL LOCATION (NAD 83 HORIZONTAL DATUM)				
Well Driller (Print)			NJ STATE PLANE COORDINATE IN US SURVEY FEET				
Driller's Signature	2.11.1	NO	RTHING:	30958	ZEASTING:	DK46.	
Registration No. 1560	Date		<del></del>	0R	<del>-                                    </del>		
		LAT	ITUDE; °	r	"LONGITUDE:	0 '	
	•	ı		'		<u> </u>	

COPIES: DRILLER

OWNER

	Well Permit Nu	mber
Eac	01013875	

#### MONITORING WELL RECORD

Atlas Sheet Coordinates

		דיורוידו	<u>scord</u>		Atlas Sheet Coo	rdinates
OWNER IDENTIFICATION N/A	TKMA HUIDING	15			· 	. · ·
Address 472 Barell Ave		, . 			<u> </u>	
City <u>Carlstadt</u>	State New	1			ode <u>0707</u> 2	•
WELL LOCATION - If not the same as ov			vner's Well N			
County <u>Bergen</u> Municipal	ity Wood-Ridge	Buro	Lot No. 10.	<mark>ري</mark> Bloc	k No. 229	
Address 3 Ethel Bouleva	rd				, - ,	
		10 A PE	– E WELL STA	ממש	Alchen	
WELL USE Monitoring	<del></del>		E WELL CO	_		
WELL CONSTRUCTION	Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Ratin (lbs/sch no
Total Depth Drilled 13 ft.	Single/Inner Casing		7	<del></del>		
Finished Well Depth 12 ft.	Middle Casing	0	\ <u></u>	7 10	Stainlessted	Sch 40
Borehole Diameter:	(for triple cased wells only)		<u> </u>	( ]	[- 	
Top <u>18</u> in.	Outer Casing					
Bottom 13 in.	(largest diameter)				 	ļ
Well was finished: above grade	Open Hole or Screen (No. Used 265 107)	2	17	yin	stainlessstei	Selva
flush mounted	Blank Casings		]	417	3 1411/183531421	X640
If finished above grade, casing height (stick up) above land surface $\gamma \alpha$ ft.	(No. Used )	 	JL		]	] 
<del></del>	Tail Piece					
Steel protective casing installed?  Yes No	Gravel Pack	]	19	19	Fil Po #1	عطا ٥٥°5
Static Water Level after drilling 5 ft.	Grout		<b>\</b>	12	Neat Cement Bentonite	s lbs
Water Level was Measured Using M Sco	L Ne	ال	J	ـــــــــــــــــــــــــــــــــــــ		
Well was developed for hours			Grouting Meth Orilling Metho		v:t4	
at   gpm		<u></u>				
Method of development Submissible	e lump	1			GIC LOG	. 1
			te each depth whe nations	re water was	encountered in consolid	ated
Pump Capacity 2.5 gpr Pump Type Whale PumP		0	·5 Fill		·	المارية المارية المارية المارية المارية
	of Rig 777007 600 fr	افط	-7 G/AY			
Health and Safety Plan Submitted? Yes	□No		-10 Fine	Change		
Level of Protection used on site (circle one)		A / /2	)-13 (DVA4	1	Sand	
,	O					
					<del>2. 2</del>	والتوريد المارية
						·
I certify that I have constructed the above re accordance with all well permit requiremen			. <u>1.,</u>			
rules and regulations.	ο απο αρρποαστο στατο					
Drilling Company SGS	,				LL LOCATION	
Well Driller (Print) Jeffery RausA		-			ONTAL DATUM	
Driller's Signature Jelly Rause		<b>I</b>			DINATE IN US SUR	
Registration No. JD0020129	Date // /5 //0	NO:	RTHING:77	1060	1. easting: 60	38451,
		-		OR		
		LAT	ITUDE: 0	·— ·—-	"LONGITUDE:0	

	Well Permit Number
FA	01013876

### MONITORING WELL RECORD

Atlas	Sheet Co	ordinates

OWNER IDENTIFICATION NA 3	RMA HOLDINGS					<u>}</u>
Address 472 Barell Ave			<del></del>			
City <u>Carlstaut</u>	State New Jersey Zip Code 67072					
WELL LOCATION - If not the same as ov	vner please give address	Ow	vner's Well No	. BW-1	P2-8	
County Berger Municipal						
Address 3 Ethel Boulevan	<u>d</u>					
WELL USE Monitoring		DAT	E WELL STA	RTED	11/5/10	
J			E WELL CO	_		
WELL CONSTRUCTION	Note: Measure all depths	Depth to	Depth to	Diameter	Material	Wgt./Ratin
Total Depth Drilled 12 ft.	from land surface	Top (ft.)	Bottom (ft.)	(inches)		(lbs/sch nc
Finished Well Depth 12 ft.	Single/Inner Casing	0	2	4in	Stainless steel	sch 40
Borehole Diameter:	Middle Casing (for triple cased wells only)					
Top <u>13</u> in.	Outer Casing	<del></del>		<del></del>		
Bottom 12 in.	(largest diameter)		ļ	<u></u>		
Well was finished: above grade Uflush mounted	Open Hole or Screen (No. Used 20 5107)	<b>a</b>	12	4in	stainless stee	x540
If finished above grade, casing height	Blank Casings (No. Used )					
(stick up) above land surface NA ft.	Tail Piece				<u> </u>	
Steel protective casing installed?  Yes No	Gravel Pack		12	12	Fil Pro#1	500 155
Static Water Level after drilling 5 ft.	Grout	0	1	12	Neat Cement Bentonite	94 lb.
Water Level was Measured Using M Scot	\	JL	JL			
Well was developed for hours			Frouting Meth Orilling Metho		ivity	<del></del>
at I gpm			Timing Meuro			
Method of development Subnersab	le Pump				GIC LOG	
Pump Capacity			e each depth whe nations	re water was e	encountered in consolida	ted
Pump Type whole Pump			-2 EII			
Drilling Fluid NA Type o	of Rig 7720 DT 600 Pr	08 5.		Clay		
Health and Safety Plan Submitted? Yes	□No		-12 Gra	Orange	<u>sand</u> sand	
Level of Protection used on site (circle one)	None ሰ C B	$A \mid L$	120.17	<del>yc</del>	29701	
I certify that I have constructed the above re	oferenced well in			,		
accordance with all well permit requiremen	ts and applicable State					
rules and regulations.		}	4 C D	TITY OF STATE	II I COLUMNA	<del></del>
Drilling Company 565	<del></del>	}			LL LOCATION ONTAL DATUM)	
Well Driller (Print) Jeffery Raus	a	NJ	<del></del> _		DINATE IN US SUR	VEY FEET
Driller's Signature Jeffey Caura		NOI	RTHING:7	31320	3.7easting: <u>6</u>	85641
Registration No. Togopolaq	Date 11/5/10			OR		
		Y.A.T	ITUDE:		LONGITUDE:º	t 19
ORIGINAL: DEP	COPIES: DRILLE	<u></u>		<del></del>		O 4 KWANIS 4 KAD 7 4-
		c.e.b.	OWNER	Ł	HEALTH DEI	ALELNIENY I

· · · · · · · · · · · · · · · · · · ·	New Jersey Department of Environmental Protection Well Permit Number							
C C W	Bureau of Water Allocation  F20/0/3/99							
OWNER IDENTIFICATION  MONITORING WELL RECORD  Atlas Sheet Coordinates  OWNER IDENTIFICATION					rdinates			
Address 727 W Was Lea Dr					<del></del>			
City (11/Ch 50)	State L	3//	/ /	1015	Zip Cod	ie 60606		
WELL LOCATION - If not the same as owner please give address Owner's Well No. (FMW)								
County beasen Muticipal		lad		Lot No.	Block	No. 229		
Address 3ethel Bl	V	Je	<u>-</u> -	, <u>~</u>				
WELL USE MACHITORINA	9			E WELL STA	_	1/9/10		
WELL CONSTRUCTION	Note: Measure all depths	Dept	th to	Depth to	Diameter	Material	Wgt./Ratin	
Total Depth Drilled ft.	from land surface	Тор	(ft.)	Bottom (ft.)	(inches)		(lbs/sch no	
Finished Well Depthff.	Single/Inner Casing	<u></u>	シ	3	8"	PIC	40	
Borehole Diameter:	Middle Casing (for triple cased wells only)		<del></del>					
Top // in. Bottom // in.	Outer Casing (largest diameter)					<del></del>		
Well was finished: Above grade  flush mounted	Open Hole or Screen (No. Used )	3	?	13	211	Puc	40	
If finished above grade, casing height (stick up) above land surface 2 ft.	Blank Casings (No. Used )	ès	?	13				
Steel protective casing installed?	Tail Piece							
Yes No	Gravel Pack Grout	2	<b>Z</b> ,	1.5	80	Neat Cement	New	
Static Water Level after drillingft.	Grout	0	<b>)</b> ·	2	8-11	Bentonite	Jy lbs	
Water Level was Measured Using 19	CCIME	<u> </u>		Frouting Meth	od	Brauits	.,	
Well was developed for hours				Orilling Metho		10 B		
atgpm		[	GEOLOGIC LOG					
Method of development					re water was en	countered in consolid	ated	
Pump Capacity gpi	m	•	for	nations				
Pump Typehali	Day 110			(2)	-7	- 11	··········	
	of Rig 18 80 19087	2	-	0 -	17 5	1W1)	<del></del>	
Health and Safety Plan Submitted?  Xes	□No			$\sigma$	7 × ×			
Level of Protection used on site (circle one)	None (b) C B	A		· <u></u>	<u></u>			
			_					
I certify that I have constructed the above reaccordance with all well permit requirement rules and regulations.	eferenced well in ts and applicable State	 						
Drilling Company						L LOCATION		
Well Driller (Print) Alegany	Pinel		ינא		<del></del>	NTAL DATUM NATE IN US SUR		
Driller's Signature	10		}.			جد حد	APP AA	
Registration No.	Date 2//6///	/	INO)	RTHING:_Z	<i>3076</i> 6. OR	FEASTING:	189995	
		İ	Y.AT	ITUDE: 0		LONGITUDE: 0	, ,	
	-					~~!!!!!!!		

DRILLER

OWNER HEALTH DEPARTMENT

COPIES:

Bureau of Water Allocation  MONITORING WELL RECORD  Atlas Sheet Coordinates							
OWNER IDENTIFICATION N/A The CUSTODIAL Trust							
Address 332 W	Warken 1	100	L. # 1 / 1	<u> </u>	<del></del>	<del></del>	
City Chicago A C	State 2/	1 210		Zin Co.	de 6 06 0	4	
		17.00	015			<b>.</b>	
WELL LOCATION - If not the same as or			vner's Well No		-1402		
	lity WOOD RING	- Buro	Lot No.	Block	:No. <u>229</u>		
Address 3 Ethill 13	<i>LU</i> :				P }		
WELL USE MANIFORING DATE WELL STARTED (0)					Ò		
	9 .	DAT	E WELL COI	MPLETED	111/1/2/1	U	
WELL CONSTRUCTION	Note: Measure all depths	Depth to	Depth to	Diameter	Material	Wgt./Ratir	
Total Depth Drilled ft.	from land surface Single/Inner Casing	Top (ft.)	Bottom (ft.)	(inches)	010	(lbs/sch nc	
Finished Well Depth 15 ft.	L	0	<u> </u>	21	PIC_	40	
Borehole Diameter:	Middle Casing (for triple cased wells only)				-	**	
Top in.	Outer Casing		<del> </del>	<u> </u>	<del></del>		
Bottom 0 in.	(largest diameter)	<u> </u>				<u> </u>	
Well was finished: Labove grade  flush mounted	Open Hole or Screen (No. Used )	5	151	21	DOK	40	
If finished above grade, casing height (stick up) above land surface ft.	Blank Casings (No. Used )						
Steel protective casing installed?	Tail Piece					4120	
Yes No	Gravel Pack	13	15	2"	#1	do	
Static Water Level after drilling 7 ft.	Grout	1	3	6	Neat Cement Bentonite	10: 1b:	
Water Level was Measured Using MC	0122		Grouting Metho	nd /	PAUL		
Well was developed for hours	w.jpca		Drilling Metho		1/04		
at gpm	) _				GIC LOG		
Method of development	if mp	\N	te each death wha		sic LOG	lated	
Pump Capacitygp	om		mations	ie water was er		iaicu	
Pump Type / Jane	0		0-5/211				
Drilling Fluid Type	of Rig & 80 DOK	12 -		-15	5#41DS -		
Health and Safety Plan Submitted?  Yes	□No ✓	-	·				
Level of Protection used on site (circle one)	None D C B	A					
				<del></del>			
I certify that I have constructed the above re	oforanced well in	)	<u></u>				
accordance with all well permit requiremen							
rules and regulations.	~ -	-	<del></del>	, 			
Drilling Company	<i></i>				L LOCATION NTAL DATUM	,	
Well Driller (Print) ORGO Free	<u> </u>	N.	<del></del>	<del></del>	NATE IN US SUI	<u> </u>	
Driller's Signature		ļ		7.11.12 m		a Care a	
Registration No. 1560	Date _2 1/6 1 1	/ INU	RTHING: Z	06/0	_ EASTING: for	1770,5	
•				OR			
		LAT	TTUDE: 0	f #1	LONGITUDE:	)	
ORIGINAL: DEP	COPIES: DRILL	ER	OWNER	3	HEALTH DE	PARTMENT	

CFWW3 1	New Jersey Department of Environmental Protection  Bureau of Water Allocation  Well Permit Nur				lumber			
	MONITORING WELL RECORD			· —	Atlas Sheet Coordinates			
OWNER IDENTIFICATION	In The custo died Trust				numates >			
Address 222 Mal	War Deep	643 157	1-61-	0100		<i>V3</i>	<del></del> -	
City Chicase	Ustate /		2/1	015	Zip Co	de 60606		
WELL LOCATION - If not the same as or	unar planea give address	-far-f				- MN3		
	ity Wood Rid			Lot No C	Block	(NO 2 3 5		
Address 3 & that 13/1	1.	フ <del>ェ</del> 	<del></del>			1		
WELLUSE Monitoring				E WELL STA		1/9/0		
-		]	OATI	E WELL CO	MPLETE <u>D</u>	11/11-9-1	<i>1</i> 5	
WELL CONSTRUCTION	Note: Measure all depths	Dep		Depth to	Diameter	Material	Wgt./Ratin	
Total Depth Drilledft.	from land surface	Тор	(ft.)	Bottom (ft.)	(inches)		(lbs/sch no	
Finished Well Depth (1) ft.	Single/Inner Casing	(	2	<u> </u>	الرحق	PIC	40_	
Borehole Diameter:	Middle Casing (for triple cased wells only)			)		-		
Top in.	Outer Casing	<u></u>						
Bottom in.	(largest diameter)						<u></u>	
Well was finished: Above grade  flush mounted	Open Hole or Screen (No. Used )	ح	 )	15	211	PUCZOK	40	
If finished above grade, casing height (stick up) above land surface ff.	Blank Casings (No. Used )							
Steel protective casing installed?	Tail Piece							
Yes No	Gravel Pack	3	> 	15	2//	#1	400	
Static Water Level after drilling 7 ft.	Grout		7	3	gl1	Neat Cement Bentonite	lbs lbs	
Water Level was Measured Using // (	COM	)L <u>-</u>		Frouting Meth	od &	o vavity		
Well was developed for hours	7-1			Orilling Metho		Sparing		
atgpm	4				<del>7/</del>	EOLOGIC LOG		
Method of development / / / /	, 	<del></del>	Not	e each depth whe		ncountered in consolic	lated	
Pump Capacitygpi	m	,		nations	- C E	$\sum_{i=1}^{n} h_i$		
Pump Type Whale	Das			<i>():</i>	5/		·····	
Drilling Fluid Type o	of Rig \$ \$ 0 MOR	4		5	15 8	ANDS.	<del></del>	
Health and Safety Plan Submitted?	□No		·					
Level of Protection used on site (circle one)	None (D) C B	A						
					•			
I certify that I have constructed the above re accordance with all well permit requiremen rules and regulations.			t _t -max-		,			
Drilling Company			<del> </del> -	AS-B	UILT WEI	L LOCATION	<del></del>	
Well Driller (Print)	12:1/					ONTAL DATUM	)	
Driller's Signature	for "		NJ	STATE PLAI	NE COORD	INATE IN US SUI	RVEY FEET	
Registration No.	Date / /		NOI	rthing:	30467:3	2 EASTING: 6	09273	
/3 00	Date				OR	_	, / -	
			JAT:	ITUDE:	T t	LONGITUDE:	י י	
	•					~~~		

COPIES:

DRILLER

OWNER

· · · · · · · · · · · · · · · · · · ·	New Jersey Department of Environmental Protection  Bureau of Water Allocation  Well Permit Number				Number			
	MONITORING WELL RECORD			Ŀ	201013			
OWNER IDENTIFICATION //	Atlas Sheet Cooldinate				ordinates			
Address 333 W.	Ducken	6/5/	1)1	;	_/_(/		<del></del>	
City Chiches	State	21	-14	03	Zip Co	de 606 06		
WELL LOCATION - If not the same as owner please give address , Owner's Well No. CFMW 4								
County Bergen Muricipality WOOD PIOSE Lot No. 8 Block No. 229								
Address 3 # the	BIV.		. <del>=-</del>	· · · · · · · · · · · · · · · · · · ·	<b>4</b>	-3:2-7		
WELL USE Monitonia	<u> </u>	3	DATI	E WELL STA	RTED _	11/10		
		]	DAT	E WELL CO	MPLETE <u>D</u>	111, n/n/	10	
WELL CONSTRUCTION	Note: Measure all depths	Dep		Depth to	Diameter	Material	Wgt./Ratin	
Total Depth Drilledft.	from land surface Single/Inner Casing	Top	(ft.)	Bottom (ft.)	(inches)	1) # //	(lbs/sch no	
Finished Well Depth ft.	[]		) 		8"	100	40	
Borehole Diameter:	Middle Casing (for triple cased wells only)						∦.	
Top in. Bottom in.	Outer Casing (largest diameter)		=====			<del></del>		
Well was finished: above grade  flush mounted	Open Hole or Screen (No. Used )	5	7	171	211	PUC	40	
If finished above grade, casing height	Blank Casings (No. Used )		<del></del>					
(stick up) above land surface 3 ft.	Tail Piece		<del></del>					
Steel protective casing installed?  No	Gravel Pack	1	2	73	8	# 1	400	
VIXes UNo Static Water Level after drilling 5 ft.	Grout	0	-,	2	81	Neat Cement Bentonite	154 lbs	
Water Level was Measured Using	75 OC				<u>.</u>	Continue 1	1 -62-10-	
Well was developed for / hours	-0 / 57		Grouting Method Oraclify Drilling Method					
at gpm				777711115 14100110				
Method of development / //	2		Mot	e each death who		GIC LOG  countered in consoli	datad	
Pump Capacitygp.	m	_		nations	ic water was er	iconffered in conson	aaica	
Pump Type _ b/hale	· /.	,				<u> </u>		
Drilling Fluid Type of	of Rig 880 1900	122		<u> </u>	3/	7 1 1 1 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 1		
Health and Safety Plan Submitted? ZYes	□No )			<del>5</del>	13-3	XIVI PS	······································	
Level of Protection used on site (circle one)	None D C B	A	-					
			_		· · · · · · · · · · · · · · · · · · ·			
·								
I certify that I have constructed the above re accordance with all well permit requiremen rules and regulations.							·	
Drilling Company				AS-B	UILT WEL	L LOCATION	<del></del>	
Well Driller (Print)						NTAL DATUM	I)	
Driller's Signature	<u> </u>		NJ	STATE PLAN	VE COORD	INATE IN US SU	RVEY FEET	
Registration No.	Date 21/61/1	/	NOI	RTHING:	30792	Zeasting:	09246,0	
·		·			OR		_	
		İ	LAT	TUDE: 0	· · "	LONGITUDE:	o ' '	

COPIES:

DRILLER

OWNER

Well Permit Number E201013895

Atlas Sheet Coordinates

#### MONITORING WELL RECORD

OWNER IDENTIFICATION MA THE FTL CUSTODIAL Trust 333 west wacker Drive Zip Code 60606 City 3 Chicago State Illinois_ Owner's Well No. CF-mw-5 WELL LOCATION - If not the same as owner please give address County <u>Bergen</u> Municipality <u>CarlStadt</u> Lot No. <u>5</u> WELL USE _monitoring DATE WELL STARTED 11-4-10 DATE WELL COMPLETED 11-4-10 WELL CONSTRUCTION Wgt./Ratin Note: Measure all depths Depth to Depth to Diameter Material (lbs/sch no Top (ft.) Bottom (ft.) (inches) from land surface Total Depth Drilled Single/Inner Casing Sth 40 4.3 PUC Finished Well Depth Middle Casing Borehole Diameter: (for triple cased wells only) Top Outer Casing Bottom (largest diameter) Open Hole or Screen Well was finished: Dabove grade 14 L PVC (No. Used If flush mounted Blank Casings If finished above grade, casing height (No. Used ) (stick up) above land surface 3 ft. Tail Piece Steel protective casing installed? Gravel Pack Yes No Neat Cement Grout ٥ Static Water Level after drilling 5 ft. Bentonite Water Level was Measured Using mscope Pour Grouting Method Well was developed for \ \ hours Drilling Method at | gpm GEOLOGIC LOG Method of development Note each depth where water was encountered in consolidated Pump Capacity gpm 10-8 Fill - Sifty San D- Water Pump Type Type of Rig R-80. mobil Dril Health and Safety Plan Submitted? Yes Level of Protection used on site (circle one) None C В I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations. AS-BUILT WELL LOCATION Drilling Company (NAD 83 HORIZONTAL DATUM) Thomas Lynch Well Driller (Print) NJ STATE PLANE COORDINATE IN US SURVEY FEET Driller's Signature northing: 730145 Easting: 60179 Registration No. Date 2/411 OR "LONGITUDE: ORIGINAL: DEP

COPIES:

DRILLER

OWNER

	Well Permit Number
E	201013896

MONITORING WELL RECORD

OWNER DENTIFICATION 11/2 15	' C. Clanial Tox	~}			Atlas bitet Co	rumates ·.
OWNER IDENTIFICATION WA FT  Address 33 west worke	L Castobial 11 as	<u> </u>	<del></del>	<del></del>	<del></del>	<del></del>
Address 33 west wacke Drive  City Chicago State Illinois Zip Code 60606						
•					•	
WELL LOCATION - If not the same as ow						
County Bergen Municipali	ty Carlotadt	Porg	Lot No3		K NO. 89	
Address 3 Ethel Roylevard	, —————————————		<del></del>		·	
WELL USE monitoring		DAT	E WELL STA	RTED	1-4-10	
<b></b>	,	DAT	E WELL CO	MPLETED	11-4-10	
WELL CONSTRUCTION	Note: Measure all depths	Depth to	Depth to	Diameter	Material	Wgt./Ratin
Total Depth Drilled 14 ft.	from land surface	Top (ft.)	Bottom (ft.)	(inches)	<u> </u>	(lbs/sch no
Finished Well Depth 14 ft.	Single/Inner Casing	<i>+3</i>	4	2	Puc	Sch LC
Borehole Diameter:	Middle Casing (for triple cased wells only)	}				]
Top 8 in.	Outer Casing	}[ }[	┤┖══╧═══ ╢	](	} <u></u>	
Bottom 8 in.	(largest diameter)	]	 		<u></u>	]
Well was finished: Above grade  flush mounted	Open Hole or Screen (No. Used )	4	14	2	PVC	<b>.</b>
If finished above grade, casing height (stick up) above land surface ft.	Blank Casings (No. Used )					
	Tail Piece					
Steel protective casing installed?  Yes No	Gravel Pack	3	14	8	]	
Static Water Level after drilling & ft.	Grout	0	3	00	Neat Cement Bentonite	lbs lbs
Water Level was Measured Using MSCo.	└──────── ≈€.	ـــــال	Grouting Meth	od Par	الــــــــــــــــــــــــــــــــــــ	
Well was developed for / hours	, .		Drilling Metho			<del></del>
at gpm		[			GIC LOG	
Method of development Pump		No.	ite each denth who		encountered in consolid	lated
Pump Capacity gpm	n.		mations	CIC WATCH WAS C	medimered in conson	luica
Pump Type whale Punp					and water	
, 1	fRig <u>B-80 mobil [</u>	ع الاتار	3-14 - Silt	1 5000	<u> </u>	
Health and Safety Plan Submitted? Yes	□No	_				
Level of Protection used on site (circle one)	None (D) C B	A				·
		.   —				
I certify that I have constructed the above re	foranced well in	-			, , , , , , , , , , , , , , , , , , ,	
accordance with all well permit requirement						
rules and regulations.		<u> </u>				
Drilling Company SIS env		Ì			LL LOCATION ONTAL DATUM	n
Well Driller (Print) Thomas Lynch		l N	<del></del>	<del></del>	ONTAL DATON	<del></del>
Driller's Signature Thomas Lynch	<u>/</u>	)		_	EASTING: 6	_
Registration No. mw 435631	Date 2/4/11	140	MIMMG		_	MT47
		}		OR		
,		LAT	TITUDE:0_		"LONGITUDE:	0 ' "
ORIGINAL: DEP	COPIES: DRILLE	ER	OWNE	R	HEALTH DI	EPARTMENT

	New Jersey Department of Environmental Protection  Bureau of Water Allocation  Well Permit Number				lumber		
	MONITODING WELL DECORD			2010/3	89		
OWNER IDENTIFICATION	The CUCAGO Truct Atlas Sheet Coordinates					ordinates :	
Address 335 IV	Walker 1	) }-		<del>-1-1-83</del> ,	<del>/</del>	<del>,</del>	
City 333Chicks	9 State	16	- 4	4015	Zip Coo	ie 6060	
WELL LOCATION - If not the same as	vner please give address	<i>_</i>	• •	ner's Well No	. ( F	1467-	7
County Replan Municipal	) () *	61	11	Lot No5	<u> </u>	No. 84	
Address 3 Ethiel	13Lv.		<del></del>	, - <del></del>			(
WELLUSE MON torche	·	I	OATI	E WELL STA	RTED	11/17	10
7		1	DATI	E WELL CO	MPLETE <u>D</u>	11-12-11	· ).
WELL CONSTRUCTION	Note: Measure all depths	Dept		Depth to	Diameter	Material	Wgt./Ratin
Total Depth Drilledft.	from land surface	Top	(ft.)	Bottom (ft.)	(inches)		(lbs/sch no
Finished Well Depth ft.	Single/Inner Casing		<u> </u>		2"	PUL	40
Borehole Diameter:	Middle Casing (for triple cased wells only)			)			
Top $\frac{a''}{a''}$ in.	Outer Casing	<u> </u>	<del></del>	! <u></u>	<u>                                     </u>		
Bottom in.	(largest diameter)	<u> </u>					<u></u>
Well was finished: above grade flush mounted	Open Hole or Screen (No. Used )	5		15-1	21	2016	40
If finished above grade, casing height (stick up) above land surface ft.	Blank Casings (No. Used )					·	
Steel protective casing installed?	Tail Piece						
Yes No	Gravel Pack	3	2		2"	#/	VIYE
Static Water Level after drilling 7 ft.	Grout	1 6	)	3		Neat Cement Bentonite	lbs lbs
	COPE	JL		Frouting Meth	od 6	1001/2	
Well was developed for hours	st op o			Drilling Metho		1754	·—·——
atgpm,	). 1	1		<del></del>	GEOLOG	SIC LOG	
Method of development	Uny		Not	e each denth whe		countered in consoli	dated
Pump Capacitygpi	m			nations .	- 1	~ / 7/	
Pump Type ///ulg	ρ.		-		-5 /	7 //	
Drilling Fluid Type of	of Rig			<del>(</del>	45 S	A 14175	· · · · · · · · · · · · · · · · · · ·
Health and Safety Plan Submitted? Yes	□No	i			<del>,</del>		
Level of Protection used on site (circle one)	None B C B	A	-				
				<u> </u>	· · · · · · · · · · · · · · · · · · ·		·
							·
I certify that I have constructed the above reaccordance with all well permit requirement rules and regulations.	eferenced well in ts and applicable State		-		,		
Drilling Company 5675				AS-B	UILT WEL	L LOCATION	
Well Driller (Print)					<del></del>	NTAL DATUM	<del></del>
Driller's Signature			NJ	STATE PLAI	NE COORD	NATE IN US SU	RVEY FEET
Registration No.	Date 2/16/11		NO]	RTHING: 7	30025 13	P EASTING: <u>6</u>	08768
					OR		
			LAT	ITUDE:°_	, 11 '	LONGITUDE:	0 '

COPIES:

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OWNER

HEALTH DEPARTMENT

CEMW 8	New Jersey Department of Environmental Protection  Bureau of Water Allocation  Well Permit Number				Number	
CEME	MONITORING WELL DECORD			20101	3.896	
OWNER IDENTIFICATION  MOINTORING WELL RECORD  Atlas Sheet Coordinate				oordinates		
Address 737 Wych	11/1/60	ax T		<u>,                                     </u>	<del> </del>	<del></del>
City Chickso	City Chicaso State, 2 ILLIMOC Zip Code 60606					
WELL LOCATION - If not the same as or	wner glease give address	Ou Ou	ner's Well N	00	MUB	
County Regels, Municipality CARLSTG CT Lot No. 5 Block No. 74						
Address 3 Ethel B	LU.	=.4			, 1	•
WELL USE MONTORIAS			E WELL STA		1 11	10
WELL CONSTRUCTION	Note: Measure all depths	Depth to	Depth to	Diameter	Material	Wgt./Ratin
Total Depth Drilled ft.	from land surface	Top (ft.)	Bottom (ft.)	(inches)		(lbs/sch no
Finished Well Depth ft.	Single/Inner Casing	0	_5	7"	PIC	40
Borehole Diameter:	Middle Casing (for triple cased wells only)		  }		. *	
Top // in. Bottom in.	Outer Casing (largest diameter)					
Well was finished: Dabove grade  flush mounted	Open Hole or Screen (No. Used )	5	15	211	PUC	40
If finished above grade, casing height (stick up) above land surface ft.	Blank Casings (No. Used )		·			
Steel protective casing installed?	Tail Piece					
Zes No	Gravel Pack Grout	13_	15_	2/	Neat Cement	4/90
Static Water Level after drilling ft.	Grout	10	3		Bentonite	lbs
Water Level was Measured Using	CUP	(	Frouting Meth	od /	Pervits	
Well was developed for hours			Orilling Metho		FIA	
at gpm			<del> </del>	GEOLO	GIC LOG	<del></del>
Method of development	) 			re water was er	countered in conso	lidated
Pump Capacity 2 gp	m	forr	nations	سري رو	P1	
Pump Type	11 00				Curio	
•	of Rig /		5	<del>/}</del> -		<del>,</del>
Health and Safety Plan Submitted? Tes	□No			20 2		
Level of Protection used on site (circle one)	None B C B	A	. <del></del>			
			200		<u> </u>	
	•					
I certify that I have constructed the above reaccordance with all well permit requirement rules and regulations.	eferenced well in its and applicable State			,		
Drilling Company	<del>,</del>		AS-B	UILT WEL	L LOCATION	•
Well Driller (Print)	12:6		<del></del>		NTAL DATUI	<u> </u>
Driller's Signature	1 per	NJ	STATE PLA	NE COORD	NATE IN US SU	JRVEY FEET
Registration No. /56 d	Date 21/61//	NO	RTHING: 7	30175.	EASTING:	08821.6
·	•	}		OR		
		LAT	ITUDE:o_	· · · · · · · · · · · · · · · · · · ·	LONGITUDE:	· · · · · · · · · · · · · · · · · · ·

COPIES:

DRILLER

OWNER

CEMM	New Jersey Department of Environmental Protection Bureau of Water Allocation  Well Permit Number  201013.899					
	MONITORING W	CORD	E.	Atlas Sheet Coo		
OWNER IDENTIFICATION				:		
Address 353 (1)	Wie Ker	Dri	++>+	<del></del>	<del>;</del>	·
City ChiChCo	State (h	Illi	h015	Zip Co	de 60606	·
WELL LOCATION - If not the same as ov	Ow	ner's Well N	A .	= MW9	<b>3</b>	
**************************************	ity CARISTOST		Lot No. 5		No. 8 4	-
Address SEThing	220.		<del></del>			
WELL USE Monitoring	5		E WELL STA		11/11/10	7
THE I CONCEDICTION	N. d. M. C. and J. ale				Notarial	1 10 -4 10 -4:-
WELL CONSTRUCTION  Total Depth Drilled   ft.	Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Ratin (lbs/sch no
Finished Well Depth ft.	Single/Inner Casing	0	سع	21	0116	40
Borehole Diameter:	Middle Casing					
Top 1 in.	(for triple cased wells only) Outer Casing	<u></u>				
Bottom in.	(largest diameter)	i I		. \	2	
Well was finished: 4 above grade	Open Hole or Screen (No. Used )	5	15	211	201C	40
If finished above grade, casing height (stick up) above land surface ? ft.	Blank Casings (No. Used )					
Steel protective casing installed?	Tail Piece			(	- <del> </del>	1 ////
Yes No	Gravel Pack Grout	5	<u> </u>		Neat Cement	BIC Ibs
Static Water Level after drilling ft.		<u> </u>	3	2	Bentonite	1b:
Water Level was Measured Using		C	Prouting Meth	od	Drayity	<del></del>
Well was developed for hours	•	I	orilling Metho	od	17511	
at gpm  Method of development	1			GEOLO	GIC LOG	
			e each depth whe nations	ere water was e	ncountered in consoli	iated
Pump Capacity gpi Pump Type /// / / / / / / / / / / / / / / / / /	111	, , , ,	11-	-5 L	G11/	
Drilling Fluid Type of	of Rio DEN MAR.	<u> </u>	É	-15	71100	
Health and Safety Plan Submitted? Yes		<del></del>	$-\underline{\nu}$			
Level of Protection used on site (circle one)	None A) C B	A -				······································
,						
		.	· · · · · · · · · · · · · · · · · · ·			······································
I certify that I have constructed the above re	ofowanaad wall in	}	<del></del>			400 - <u></u>
accordance with all well permit requiremen						
rules and regulations.  Drilling Company	60	<del> </del>	AS-B	UILT WEI	L LOCATION	<del></del>
Well Driller (Print)	// · · · · · · · · · · · · · · · · · ·	<u> </u>			ONTAL DATUM	(i)
Driller's Signature	<u></u>	NJ	STATE PLA	NE COORD	INATE IN US SU	RVEY FEET
Registration No.	Date 2/16/11	NO	RTHING:	30374	ZEASTING <u>60</u>	8 140,1
7)0-	2000 21.5177	}	,-	OR		
		LAT	ITUDE:o_	r 1	LONGITUDE:	o '

COPIES:

DRILLER

OWNER

· Fulling	New Jersey Department of Environmental Protection Well Permit Number  Bureau of Water Allocation					
	MONITORING WELL RECORD Atlas Sheet Coordinates					<i></i>
OWNER IDENTIFICATION	The Cuttadia trust					
Address 722 W	Well Kem	Tor		<b>3</b> /	<del>:                                    </del>	
City Phillipp	State 7/	1-1 n	01'(	Zip Co	de 6161	2/
Children	7	·- ·- ·-			> MW	/w // )
WELL LOCATION - If not the same at or County BUGGEN Municipal	~// + , ,		ner's Well N	~ <del>~</del>		
Address Z Fhel B	Ly.	<i></i>	Lot No <b>5</b> -	. Block	K 140.	
WELL USE //Andfaring		DATI	E WELL STA	ATTEN	a last	$\widehat{\mathcal{O}}$
- Hamarag			E WELL CO		19/10/10	2/10
WELL CONSTRUCTION	Note: Measure all depths	Depth to	Depth to	Diameter	Material	Wgt./Ratir
Total Depth Drilled ft.	from land surface Single/Inner Casing	Top (ft.)	Bottom (ft.)	(inches)		(lbs/sch no
Finished Well Depth ft.	L	0	5	21	PUL	40
Borehole Diameter:	Middle Casing (for triple cased wells only)	}				
Top in.	Outer Casing		╠ <del>╌┈╤╧╌╌╌</del>			
Bottom in.	(largest diameter)	<u> </u>				
Well was finished: Above grade flush mounted	Open Hole or Screen (No. Used )	5	15'	2"	DOK	40
If finished above grade, casing height (stick up) above land surface fit.	Blank Casings (No. Used )					
Steel protective casing installed?	Tail Piece					1 222
☑ Yes ☐ No	Gravel Pack Grout	1 3	125		Neat Cement	94 lbs
Static Water Level after drillingft.	Giode	0	7	8	Bentonite	D lbs
Water Level was Measured Using	Lopi	(	routing Meth	od /	or Aust's	
Well was developed for hours		I	orilling Metho	$d = \frac{1}{4}$	514	
atgpm			<del></del>	GEOLO	GIC LOG	<del></del>
Method of development / Mup				re water was e	ncountered in conso	lidated
Pump Capacity 2,5 gp	m	for	nations			
Pump Type _ flall	al care	-	13-1		7/	
Drilling Fluid Type		CL -	F-15	C-4	441)	
Health and Safety Plan Submitted?  Yes	□No				<i></i>	
Level of Protection used on site (circle one)	None D C B	A -	`\		·	
	•					
I certify that I have constructed the above raccordance with all well permit requirement rules and regulations.						
Drilling Company	_		AS-B	UILT WE	LL LOCATION	1
Well Driller (Print)	Day		<del></del>		ONTAL DATU	<u> </u>
Driller's Signature	v ya "	NJ	STATE PLA	NE COORE	INATE IN US S	URVEY FEET
Registration No.	Date 2/4/1	/ NO	RTHING: Z		✓ EASTING:_	6 <i>085</i> 21.,
				OR		_
		LAT	ITUDE:0_	· · · · · · · ·	"LONGITUDE:	_ · _ · _ · _ · _

COPIES:

DRILLER

OWNER

	Well Permit Number
FD	00013901

#### MONITORING WELL RECORD

F701013401 Atlas Sheet Coordinates

OWNER IDENTIFICATION N/A		S . 1			Atlas Sheet Cot	i dinates		
	he FTL cust				<del>; :                                   </del>	<del></del>		
. ·								
WELL LOCATION - If not the same as owner please give address  Owner's Well No. CF-MW-11  County Research Municipality Carlstadt Boro Lot No. 5 Block No. 84								
	iv <u>Carlstadt</u>	<u> 5000</u>	Lot No.	7 Block	(No. 84			
Address 3 Ethel Boulevard								
WELL USE monitoring		DAT	E WELL STA	ARTED	11-10-10			
9		DAT	E WELL CO	MPLETED	11-10-10			
WELL CONSTRUCTION	Note: Measure all depths	Depth to	Depth to	Diameter	Material	Wgt./Rating		
Total Depth Drilled 12 Ft ft.	from land surface	Top (ft.)		(inches)		(lbs/sch no.		
Finished Well Depth 2ft ft.	Single/Inner Casing	+30	2	2in	PVC	51440		
Borehole Diameter:	Middle Casing							
Top 8 in.	(for triple cased wells only)		<u> </u>		<u> </u>	<u></u>		
Bottom 8 in.	Outer Casing (largest diameter)	  }						
Well was finished: Mabove grade	Open Hole or Screen	2	12		PUL	Sur		
flush mounted	(No. Used )	×	102	din		10 40		
If finished above grade, casing height	Blank Casings (No. Used )	] }		} 	l e			
(stick up) above land surface ft.	Tail Piece							
Steel protective casing installed?  Yes No	Gravel Pack	7	12		14 SanD			
✓ Yes ☐ No Static Water Level after drilling 5 ft.	Grout	6			Neat Cement Bentonite	lbs lbs		
	ne	JL	J	JL	/L	lius		
Water Level was Measured Using mscope  Well was developed for hours			Grouting Method Pour Drilling Method HSA					
at gpm		, ,	Drilling Metho					
Method of development Pump					GIC LOG			
Pump Capacity gpr	n		te each depth whe mations	re water was er	acountered in consolid	ated		
Pump Type whater pump					·			
Drilling Fluid N/A Type of Rig Geo Probe			5-12 Silty-sand					
Health and Safety Plan Submitted? Yes	□N ₀	_   _	<del></del>	<del></del>	·· <del>····</del>			
Level of Protection used on site (circle one)	None (b) C B	$_{\rm A}$						
	O							
		_						
I south that I have coverturated the above to	£		<del></del>	<del></del>	<del></del>	<del></del> }		
I certify that I have constructed the above reaccordance with all well permit requirement rules and regulations.								
			AS-B	UILT WEL	L LOCATION			
Well Driller (Print) Thomas Lynch  Mas-Boll: Well Local  (NAD 83 HORIZONTAL DA								
Driller's Signature Thomas Lynd  NJ STATE PLANE COORDINATE IN US SURV					VEY FEET			
Registration No. MW 435631 Date 2/4/11 NORTHING: 730493 EASTING: 6828					8786			
0 1/100 13 JUDI	Date 0/ 1/11			OR		ļ		
		LAT	TTUDE: 0	t 11	LONGITUDE: 0	r 60		
ORIGINAL: DEP	COPIES: DRILLE		OWNER		HEALTH DE	יייי היי היי אותות א		

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OWNER

## MONITORING WELL RECORD

Well Permit Number
E2010/3902
Adlan Chart Charlington

OWNER IDENTIFICATION TIF	FTL Custopial	1-1.51			Atlas Sheet Coo	orumates		
Address 333 West was	Ker Drive	1147	<u></u>	<del></del>	<del></del>	<del></del>		
City ChiCago	Ker Drive State Illinois			Zip Co	de 60606			
WELL LOCATION - If not the same as owner please give address  Owner's Well No. CF mw-12						-		
County <u>Rergen</u> Municipal	ity codstodt l	<u>ζ</u> νιν	Lot No. 5	Block	(No. 84			
Address 3 Ethel Boulevard	Carronage	<u> </u>		<u>/</u>				
					S. B and			
WELL USE <u>monitoring</u>	· · · · · · · · · · · · · · · · · · ·		E WELL STA					
	•	DAI	E WELL CO	WALETED	11-10-10			
WELL CONSTRUCTION	Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Ratii (lbs/sch no		
Total Depth Drilled ft.	Single/Inner Casing	( <del> </del>	Dottom (n.)	(mones)		5.40		
Finished Well Depth 12 ft.	L	+3	<i>-</i>		PUC	3.77.40		
Borehole Diameter:	Middle Casing (for triple cased wells only)	[] <del>}</del> }	<b> </b>		(· )			
Top $\frac{\mathcal{E}}{\mathcal{O}}$ in.	Outer Casing							
Bottom 8 in.	(largest diameter)	\\	<u> </u>		<u></u>			
Well was finished: ✓ above grade ☐ flush mounted	Open Hole or Screen (No. Used )	2	12	12	Puc	₩ &P		
If finished above grade, casing height	Blank Casings					\ ·		
(stick up) above land surface 3 ft.	(No. Used )	 	\ \	<del> </del>	]			
Steel protective casing installed?	Tail Piece Gravel Pack	<del> </del>	12	1 8	)\ }			
Yes No	Gravel Fack		<del>                                     </del>	<del></del>	Neat Cement	lb:		
Static Water Level after drilling 5 ft.		0.		8	Bentonite	lbs		
Water Level was Measured Using m SCO	(	Grouting Method Pair						
Well was developed for hours Drilling Method					9			
at gpm				GEOLO	GIC LOG			
Method of development Pump			Note each depth where water was encountered in consolidated					
Pump Capacity gpm formations  Pump Type 14 127 2 12					water			
Pump Type Whater Pump			5-12 Silty - San P					
/	of Rig <u>Geo Probe</u>			1				
Health and Safety Plan Submitted?  Yes	∐No							
Level of Protection used on site (circle one)	None (D) C B	A ] —						
		-						
·								
I certify that I have constructed the above re								
accordance with all well permit requiremen rules and regulations.	ts and applicable State		<del></del>	,				
Drilling Company _ 565 env			AS-B	UILT WE	LL LOCATION	<del></del>		
Well Driller (Print) Thomas Lync	· la				ONTAL DATUM	<del></del>		
Driller's Signature Thoma Light	<del></del>	1			INATE IN US SUI			
Registration No. MW 433621 Date 2/4/11 NORTHING: 730737 EASTING: 608					08389			
OR								
		LAT	TTUDE: 0	· · ·	LONGITUDE:	o '		
ORIGINAL: DEP	COPIES: DRILLE	L E <i>R</i>	OWNE		HEALTH DI	EPARTMEN		

CFYZ,	New Jersey Department of Environmental Protection					Well Permit Number		
	Bureau of Water Allocation				201013893			
MONITORING WELL RECORD  Atlas Sheet Coordinate						ordinates		
OWNER IDENTIFICATION	M/A The	CUST	OPIAL		Vst.	<u> </u>		
Address 323 W	12 Decen	De	·					
City Chicago	State	LLY	1405	Zip Co	de 60601	· ·		
WELL LOCATION - If not the same as o	wner please give address	On	wner's Well N		-P>	,		
County BERSEVA Municipa					No.229	•		
Address 3 Sthel	RIU,	7	<del>.</del> . – •					
WELL USE		D. 10		L'EDETENS	160	)		
WELL USE MONITORING			DATE WELL COMPLETED 11/0/10/10					
	•	DAI	E WELL CO	MILTEIFD		16		
WELL CONSTRUCTION	Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Ratin (lbs/sch no		
Total Depth Drilled ft.	Single/Inner Casing	(2)	Dolloin (ii.)	(monos)	77/10	1 ///		
Finished Well Depthft.	Middle Casing	<u> </u>	<u> </u>	2"	PVC	70		
Borehole Diameter:	(for triple cased wells only)		1			  }		
Topin.	Outer Casing							
in.	(largest diameter)	<u></u>				ļ		
Well was finished: above grade flush mounted	Open Hole or Screen (No. Used )	5	15	2 "	PIC	140		
If finished above grade, casing height	Blank Casings							
(stick up) above land surface 3 ft.	(No. Used )	[[		<u> </u>		<u> </u>		
Steel protective casing installed?	Tail Piece				27 1	1077/11		
Yes No	Gravel Pack Grout	-	15	211	Neat Cement	4(00) 99 lbs		
Static Water Level after drilling ft.	}	0.	3	8"	Bentonite	lbs		
Water Level was Measured Using	POPE		Grouting Meth	od bo	PAVILY			
Well was developed for hours	•		Drilling Metho	d	SA			
at gpm			GEOLOGIC LOG					
Method of development			Note each depth where water was encountered in consolidated					
Pump Capacity 2 gp	m	for	formations F. H.					
Pump Type	Die to	-	THE CAIN DC					
	of Rig <i>BJU MBU</i>	2 -	5	<u> </u>				
Health and Safety Plan Submitted?	□No							
Level of Protection used on site (circle one)	None O C B	A -		<del></del>				
		-	<del></del>					
,	•							
I certify that I have constructed the above r	eferenced well in	-						
accordance with all well permit requirement rules and regulations.	its and applicable State			1				
Drilling Company	(		AS-B	UILT WEI	L LOCATION			
Well Driller (Print)			(NAD 83 HORIZONTAL DATUM)					
Driller's Signature	7.1	ì			INATE IN US SUI	•		
Registration No. 1560	Date 2/4/11	NO	RTHING:	30167	_ easting:	08907		
				OR				
		LAT	TITUDE: 0	r ti	LONGITUDE:	) †		
	•							

COPIES:

DRILLER

OWNER

HEALTH DEPARTMENT

· CEPZ	New Jersey Department of E Bureau of Wate			مرز ا	Well Permit 1	Number
	MONITORING W			Æ	20/013	874
OWNER IDENTIFICATION	MOMIONION CH	FUO	i a	<i>F</i>	Atlas Sheet Co	ordinates
Address 727	116	) <u>(                                   </u>	AL /	CK/	<del>,                                    </del>	<del></del> -
5-6-1-1-1-1-1	State TILL	1 1 1982		Zip Co	de / 0/ 0 /	
		4015			50006	
WELL LOCATION If not the same as to County Reache & Municipal	wher please give address.  In wood RiAGO		ner's Well N Lot No		No 729	2_
Address 7 1 1 1 1	WOOTH KING	( 10 10 C	LOT 140.	Block		1 .
5-61-11-1	<i>/</i>	<del></del>	<del>-</del>		116	10
WELL USE /U INITOD I'M	<b>5</b>		E WELL STA			<u> </u>
	•	DATI	E WELL CO	MPLETED		10
WELL CONSTRUCTION	Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Ratin (lbs/sch no
Total Depth Drilledft.	Single/Inner Casing		Dottoin (ii.)	717	1) 1/6	77,7
Finished Well Depth (10 ft.	Middle Casing				PUC	70
Borehole Diameter:	(for triple cased wells only)	[ 	<u>.</u>		<u> </u>	
Top in. Bottom in.	Outer Casing (largest diameter)					
Well was finished: Dabove grade	Open Hole or Screen	1 2		][]	5//	
If flush mounted	(No. Used )	8	18	2"	1708	40
If finished above grade, casing height (stick up) above land surface 7 ft.	Blank Casings (No. Used )	) }	-			
<del>-</del>	Tail Piece				111 (	
Steel protective casing installed?  Yes \( \sum \) No	Gravel Pack	6	18	18	#1	4/10
Static Water Level after drilling /// ft.	Grout	1	8	8	Neat Cement Bentonite	lbs lbs
Water Level was Measured Using ///	Carlo	ـــــــــــــــــــــــــــــــــــــ	Frouting Meth	JL	Carcito	
Well was developed for hours			Drilling Metho		y acris	<del></del>
at / gpm					GIC LOG	<del></del>
Method of development / / / / /	<i>り</i>	- Not	e each depth who		ncountered in consoli	idated
Pump Capacity gp	m ·		nations .	3	V 11	
Pump Type Whale	<i>P</i> .					
Drilling Fluid Type	of Rig Bro		<del></del>	-/-	<u> </u>	<u> </u>
Health and Safety Plan Submitted? ZYes	□No	<b></b>		<del> </del>		
Level of Protection used on site (circle one)	None D C B	A				
•					. <u> </u>	<u></u>
I certify that I have constructed the above r	eferenced well in					
accordance with all well permit requirement rules and regulations.	ts and applicable State	}		,		
Drilling Company			AS-B	UILT WEI	L LOCATION	
Well Driller (Print)	.10	<u> </u>	<del></del>		ONTAL DATUM	<del></del>
Driller's Signature		NJ	STATE PLA	NE COORD	INATE IN US SU	RVEY FEET
Registration No.	Date 2 //h/ /	/ NO	RTHING: Z	2652/2	⊈easting: <u>&amp;</u>	08975
/) V				OR		
		LAT	ITUDE:o_	r r	LONGITUDE:	o '

ORIGINAL: DEP

COPIES:

DRILLER

OWNER

HEALTH DEPARTMENT

(FYZ)

## New Jersey Department of Environmental Protection Bureau of Water Allocation

٠ ــــــــــ	· Well Permit Number									
La	מי	111	17	90	19					
+					<del></del>					

	MONITORING W	מכודים	COPD	. <del>L</del>	201013	903		
	Montrolling W		CORD	. +	Atlas Sheet Coo	ordinates		
OWNER IDENTIFICATION	MC (US!0	vial	/[]	(5/	<del>;</del>	<del>``</del>		
Address 355 Weg	t weaker	/	V	<del></del>	· · · · · · · · · · · · · · · · · · ·			
City ChiCASO	State/ I	! /hc	<u> </u>	Zip Co	de 60606	•		
WELL LOCATION - If not the same as o	wner please give address	. Ow	ner's Well N	o. ( 1	ニクターマ	7		
County Lenger Municipal		1 42	Lot No.		(No. 84			
Address 3 9 Houl RY	// ~ <del>!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!</del>	<u> </u>		<del></del>	- <del> </del>			
-J-CI	<i>U</i>		_		11.			
WELL USE Montonly	<del> </del>	DATI	E WELL STA	RTED _	1111	Û		
		DATI	E WELL CO	MPLETED	11/11/10	,		
WELL CONSTRUCTION	Note: Measure all depths	Depth to	Depth to	Diameter	Material	Wgt./Ratin		
Total Depth Drilled 19 ft.	from land surface	Top (ft.)	Bottom (ft.)	(inches)		(lbs/sch no		
Finished Well Depth ft.	Single/Inner Casing	0	9	21	PVC	Un.		
Borehole Diameter:	Middle Casing				  -			
Top of in.	(for triple cased wells only)	<u> </u>	<u> </u>					
Bottom in.	Outer Casing (largest diameter)			-				
Well was finished: Dabove grade	Open Hole or Screen	(A)	101	21	21/2	1/3		
flush mounted	(No. Used )	9'		2'	PVC	40		
If finished above grade, casing height	Blank Casings (No. Used )			]}				
(stick up) above land surfaceft.	Tail Piece	]( }(	 	 	<u> </u>	\ <u> </u>		
Steel protective casing installed?	Gravel Pack	/	16	OF	A I	4/15		
Yes No	Grout		<del></del>		Neat Cement	OG lbs		
Static Water Level after drillingft.		19	7	8	Bentonite	lbs		
Water Level was Measured Using	_	G	Grouting Method Or.works					
Well was developed for hours	•	Γ	Drilling Method					
at gpm				GEOLO	GIC LOG	<del></del>		
Method of development		Not	e each depth whe		ncountered in consolic	lated		
Pump Capacitygp.	m	1 ^	nations					
Pump Type // hali fing	-					<u></u>		
Drilling Fluid Type	of Rig 180 140871	_	10-8		<del>/</del> _			
Health and Safety Plan Submitted? TYes	∐No )		<u> </u>		<u> </u>	<del></del>		
Level of Protection used on site (circle one)	None (T) C B	A	5-1	5 S &	(41 D	·····		
	<b>O</b>	]						
I certify that I have constructed the above $r_0$	eferenced well in				<u> </u>	<del></del>		
accordance with all well permit requiremen								
rules and regulations.		<u> </u>		, 	<del></del>	<del></del>		
Drilling Company	<del></del>				LL LOCATION ONTAL DATUM			
Well Driller (Print) Officiary	Kirak	NI			INATE IN US SUI	<del></del>		
Driller's Signature		ļ		707/16	<i>a</i>			
Registration No.	Date 2/16/11	, INOI	NORTHING: 130309.9 EASTING: 60 8982,3					
, •	<b>/</b>	}		OR				
		LAT	(TUDE:o_	' '	LONGITUDE:	o ' '		

· CFPZ7	New Jersey Department of E Bureau of Wate				·	Well Permit N	Jumber		
	MONITORING W				E	201013	904_		
OWNER IDENTIFICATION	The CUSTO	<i>D</i>			vsf	Atlas Sheet Coo	ordinates		
Address 333 //n	Who Ken	· //	)/						
City Chick Say	State Z	1/2	I	hoic	Zip Co	de 6060	6		
WELL LOCATION - If not the same as o	wner please give address		•	ner's Well No	PP	PZ-4			
·4 /	lity Carlstalt	Rox				No. 94			
Address Fifthel	Z/V.	<del> </del>							
WELL USE Mantorn	16	r	ATI	E WELL STA	RTED	1/12/10			
DATE WELL COMPLETED 11/12/15									
WELL CONSTRUCTION	Note: Measure all depths	Dept		Depth to	Diameter	Material	Wgt./Ratin		
Total Depth Drilledft.	from land surface Single/Inner Casing	Top	(11.)	Bottom (ft.)	(inches)	15 10	(lbs/sch no		
Finished Well Depth ft.	L		_		2"	PVC	70		
Borehole Diameter:	Middle Casing (for triple cased wells only)		Ì	{					
Top in.	Outer Casing								
Bottom <u>ð</u> in.	(largest diameter)						<u> </u>		
Well was finished: Labove grade  flush mounted	Open Hole or Screen (No. Used )		7	17	2"	PVC	40		
If finished above grade, casing height (stick up) above land surface ft.	Blank Casings (No. Used )								
Steel protective casing installed?	Tail Piece								
Yes No	Gravel Pack	5	_	17/	811	#	400		
Static Water Level after drilling 9 ft.	Grout	K	<b>Z</b> )	5	8/11	Neat Cement Bentonite	0 lbs		
Water Level was Measured Using / CO	OP 9	JL		routing Meth	ođ 🗸	Zente	.JL <del>`</del>		
Well was developed for hours	7		Drilling Method /- CH						
at gpm		[			GEOLOG	GIC LOG			
Method of development	<del></del>		Not	e each depth whe		acountered in consolic	iated		
Pump Capacitygp	m			nations					
Pump Type Whale	·			100 -	C 11	·	<del></del>		
	of Rig 180 Modif	<u>/.                                    </u>		-0-5	<i>[=[]</i>				
Health and Safety Plan Submitted? Yes	□No			T+17	SA	WD			
Level of Protection used on site (circle one)	None 🗗 C B	A		2	J		,		
							w/		
•							······································		
I certify that I have constructed the above re accordance with all well permit requiremen	eferenced well in ets and applicable State	!			,				
rules and regulations.  Drilling Company	<i>/</i>		<b>⊨</b> -==	AS-R	UILT WEI	L LOCATION	- <del></del>		
Well Driller (Print)	110. 1					ONTAL DATUM	()		
- C12- 67 61C1	WYIORK		NJ	STATE PLAI	VE COORD	INATE IN US SUI	RVEY FEET		
Driller's Signature Registration No. 1560	211/11	,	NOI	RTHING: 7	306291	3 EASTING:	18715.4		
ACCEPTATION 140.	Date 2//6///				OR.				
		ļ	<b>ገ</b> ለሞ	TUDE: 0		LONGITUDE:	0 ;		
	•		1.25 I			POMOTIONE:			

ORIGINAL: DEP

COPIES:

DRILLER

OWNER

HEALTH DEPARTMENT

DWR-138 M 6/89



#### New Jersey Department of Environmental Protection Division of Water Resources

## MONITORING WELL RECORD

		Well	Permit No	22 	2863 93	Г
			Sheet Coordi	nates	_::	
OWNER IDENTIFICATION - Owner _	NJDEP/BUR. OF SIT	E MGMT.				
Address			N1-			
City	TRENTUN		State		Zip Code	
WELL LOCATION Househouse and		0	ada Mall Ma	MW-2		
WELL LOCATION - If not the same as						5
County Bergen Address Berry's Creek	_ municipality <u>Wills-r</u> Tandfill Blum B	lvd.		_ LOI 140C	5 Block No. 22	
•			****			
TYPE OF WELL (as per Well Permit Ca			200	3957		
Regulatory Program Requiring Well			Case I.I	D. #		
CONSULTING FIRM/FIELD SUPERVI	SOR (if applicable) N	JDEP			Tele. #	
WELL CONSTRUCTION		Depth to	Donth to			
Total depth drilled 19 ft.	* 41	Contract to the second	Bottom (ft.)	Diameter (inches)		á
7/4/9/3			d surface]	(micues)		1
Well finished to 19 ft.	Inner Casing	-2-5	4	4	S.S. F.J.	
Borehole diameter:	Outer Casing					$\neg$
Top 10 in.  Bottom 10 in.	(Not Protective Casing)					
Well was finished: XX above grade	Screen (Note slot size)	4	19	4	S.S. F.J020	
	Tail Piece					
If Ilnished above grade, casing	Gravel Pack	3	19	10	#1 Morie	
height (stick up) above land surface 2.5 ft.	Annular Seal/Grout	0	.3	10	bentonite & cemer	at .
Was steel protective casing installed?	Method of Grouting	Tromie	Tremie Pipe			
XXYes No		TIGHT				
Static water level after drilling 71	4	GEO	DLOGIC LOG	(Copie:	s of other geologic logs and	l/or
Water level was measured using 1		l T		geopiis	ysical logs should be attach	180.)
Well was developed for 1.5 hou			See Att	ached		
Method of developmentPump		:				- 1
Was permanent pumping equipment in		_			a.	
Pump capacitygpm		1				
Pump type:						1
Drilling Method Auger					·	
	of Rig CME-75	81				
Name of Driller Jay Stevens		0.1	Flar 13			
Health and Safety Plan submitted?			DE TRIT			د.
Level of Protection used on site (circle of	~ ~	MOITE PROFIS	"	4.		
N.J. License No. J-1412			ı; , ,			
Name of Drilling Company	I.C. SERVICES			+		
certify that I have drilled the above	referenced well in sec	vandeness usail	all wall pass	mit rocuiro	monte and all confeable	
State rules and regulations.	-ioicioiicod wan iit 800	WILLIAM WILL	i an wen peri	rut requirer	пена ани ан аррисавте	
	A -	00			- 11	

Driller's Signature Suy Sulvey Date 2/1/91

COPIES: White & Green - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

# W. C. SERVICES, INC.

## SINGLE CASED WELL

1					Coord. # 26	:03:886
2.5'			WELL LOG	FEET FROM GROUND SURFACE 0 to 20 1	NJDEP NA	ME OF OWNER
GROUND		LEVEL	fill	0 - 2'		ridge, N.J. reek Landfill
1 1			fill with trash &		Well No. MW-2	
200			wood fragments	2 - 12'	Cinto Bossii	522883
	8		medium gray silty	12 - 14'		730
			clay, trace very fine		Test Pumped (Hrs.)	1.5
		•	sand, black staining		Capacity (GPM)	6
			root fragments	14 - 16'	Static Level	7'
	251		light brown, very fine		Pumping Level	
			medium sand with clay		Datum	ground
			and silt;,some silt	16 - 18'	Specific Capacity	ii .
E			yellow brown, light		Diameter of Casing	4"
191			brown, clayey fine		Depth of Well (Ground)	19'
`			sand	18 - 204	Depth to Gravel	3'
Ę					Gravel Size	#1 Morie
TOTAL DEPTH					Length of Casing & Screen	21.5'
, 101			, ·		Screen Material S	tainless steel
					Screen Mig.	Johnson
					Screen Dia.	4*
1					Length of Screen	15'
· An			era d		Top of Screen Filling	flush joint
					Bottom of Screen Fitting	flush joint c
		M at a			Slot Size	.020
15'	三三三				Seal Material COI	ent bentonite
		nes *			Quantity	1 bag cement
					Depth of Seal Material	3'
_ <del></del>		<b></b>			Oriting Machine	D-12
	26				Date Well Completed	11/29/90
					Orider Tare Cho	######################################

OWR-138 M



### New Jersey Department of Environmental Protection Division of Water Resources

## MONITORING WELL RECORD

•		Well   Atlas	Permit No Sheet Coordi	26 - 26 nates 26	2878 : 03 : 886	
OWNER IDENTIFICATION - Owner _	NIPEDVOLD, DE SI	TE MEMI.				
Address	478 F. STATE STR	EET				
City						
						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
WELL LOCATION - If not the same as	owner please give acore	ss. Own	iers meil Mo.	Latitle	Di- I. M-	
County Bergen Address	_ Municipality	RIDGE BUF	<del> </del>	LOT NO	10,10B BIOCK NO	229
TYPE OF WELL (as per Well Permit Ca	ategories)				d 11 / 27 / 90	
Leading of English Leading Assi	O-ROLA		Case I.	D. #		
CONSULTING FIRMFIELD SUPERVI	SOR (il applicable) NJI	)EP			Tele. #	
WELL CONSTRUCTION		Depth to	Depth to			
			Bottom (ft.)	Diameter	Type and Materia	al
Total depth drilled 16 ft.		Y	d surface]	(inches)	Typo and motorial	
Well finished toft.	Inner Casing	· -2.0	1	4	S.S. F.J.	
Borehole diameter:	Outer Casing		-			
Top 10 in.  Bottom in.	(Not Protective Casing)				<u> </u>	
Bottomin.	Screen (Note slot size)	1	16	4	S.S. F.J020	
Vell was finished: XX above grade					3.00 1.00	
flush mounted	Tail Piece		,			
If finished above grade, casing height (stick up) above land surface 2.0 ft.	Gravel Pack	1	16	10	#1 Morie	
	Annular Seal/Grout	0	1	10	bentonite & ce	ment
Was steel protective casing installed?	Method of Grouting	T	remie Pipo	3		
XXYes No			-			
Static water level after drilling 2	ft.	GEO	DLOGIC LOG	(Copies	s <b>of other</b> geologic <b>logs a</b> r <b>sical logs</b> should <b>be atta</b>	ind/or sched )
Water level was measured using				3p)		
Well was developed for 3 hou			See Atta	ched		
Method of development Pump						
Was permanent pumping equipment in	etallada Vas XXVI					
Pump capacitygpm	President [ 142 [ 144	١ ١				
Pump type:		1			:Veve	
Drilling Method Auger					•	
	of Rig CME 75					
Name of Driller John White		3 .81	Lau		es d	
	X Yes No	10 C	i Mari		3.4	E.*.
Level of Protection used on site (circle	~ ~	10 1.	. 7	<del>335</del>		
N.J. License NoJ-0963	. 00- 8:	· ·		( <b></b> .)		
Name of Drilling Company	W.C. SERVICES					
I certify that I have drilled the above State rules and regulations.	e-referenced well in acc	cordance with	h all well per	mit requirer	ments and all applicable	e
Driller's Sign	ature	fw	lile	D	ate <u>2/1/91</u>	
COPIES: White	& Green - DET Canar	y - Dtiller	Pink - Owner	Goldenrod	! - Health Dept.	٠

## W. C. SERVICES, INC.

## SINGLE CASED WELL

21.12878

Coord. # 26:03:886 WELL LOG FEET FROM NAME OF OWNER **GROUND SURFACE** NJDEP 0 10 _ Woodridge, N.J. GROUND . LEVEL Location Rocks, gray sand, Berry's Creek Landfill white sand, gray clay Well No. MW-8. 0 - 16' State Permit 2622878 Job No. 22730 Test Pumped (Hrs.) 3 hrs. Capacity (GPM) 9 Static Level 21 **Pumping Level** 15' **Dalum** ground Specific Capacity Olameter of Casing 4" Depth of Well (Ground) 16' Depth to Gravel 1' Gravel Size #1 Morie Length of Casing & Screen 18' Screen Material 5.5. Screen Mig. Johnson Screen Ola, Length of Screen 15' Top of Screen Filling (C.) flush joint pipe Bottom of Screen Fitting flush joint cap Slot Size -020 . 715 Seel Material cement & bentonite Quantity 1 bag cement Depth of Seal Material 1' Origing Machine Auger Rig Date Well Completed 11/27/90 John White J-0963



#### New Jersey Department of Environmental Protection Division of Water Resources

## MONITORING WELL RECORD

4		We	III Permit No	26 2 instes 25	2880 0 : 03 : 886		
DWNER IDENTIFICATION - Owner	NIDER/RID OF ST				•		
DWNEH IDENTIFICATION - Owner	428 E. STATE STR	EE!					
Address	THENTON		State		7in Code		
aty			State		Zip Code		
WELL LOCATION - If not the same as County Bergen	Municipality unno	BIOGE BO					
Address Berry's Creek Lar							
TYPE OF WELL (as per Well Permit Ca							
Regulatory Program Requiring Well	CERCLA		Case I.	D.#			
CONSULTING FIRMFIELD SUPERVI	SOR (if applicable)	<u>, , , , , , , , , , , , , , , , , , , </u>			Tele. #		
WELL CONSTRUCTION	1	Depth to	Depth to	Diameter			
Total depth drilled 16.5 ft.  Well finished to ft.		Top (ft.) [From la	Bottom (ft.) and surface)				
	Inner Casing	. 0	1.5	4	S.S. F.J.		
Borehole diameter:  Top 10 in.  Bottom 10 in.	Outer Casing (Not Protective Casing)						
	Screen (Note slot size)		16.5	4	S.S. F.J020		
Vell was finished: 🔯 above grade	Tail Piece						
finished above grade, casing	Gravel Pack	1	16.5	10	#1 Morie		
height (stick up) above land surface _0ft.	Annular Seal/Grout	0	1	10	Bentonite & cement		
Was steel protective casing installed?	Method of Grouting	Tremie	Pipe _				
Static water level after drilling 2	ft.	G	EOLOGIC LOC	(Copie	s of other geologic <b>logs</b> and/or ysical logs should <b>be</b> attached.)		
Water level was measured using M Well was developed for 3.5 hou Method of development pump	rs at 9 gpm		See Attac	See Attached			
Nas permanent pumping equipment in omp capacitygpm	stalled? Yes XX No	,					
Pump type:							
Orilling Method Auger		l			¥.		
Ortifling Fluid None Type	of Rig CME 75	[		¥			
Name of Driller John White							
lealth and Safety Plan submitted?X		हा है।			and the s		
Level of Protection used on site (circle of J.J. License NoJ_0963	One) None (D.C) B A	* ** :	***** *****				
lame of Drilling Company							
certify that I have drilled the above State rules and regulations.	Ol.		0		alilai		
Driller's Signa	ature	200	and a	D	ate 0/////		

Canary - Driller Pink - Owner Goldenrod - Health Dept.

## W. C. SERVICES, INC.

26 27380

Auger Rig

11/14/90

Oate Well Completed

SINGLE CASED WELL Coord. #26:03:886 WELL LOG FEET FROM NAME OF OWNER **GROUND SURFACE** NJ DEP 010 1616" Location Woodridge, N.J. GROUND . LEVEL black rocks, light 0 - 4'Berry's Creek Landfill 4 - 81 green white sand, brown Well No. MW-10 Slate Permit sand, 2622880 Job No. brown clay & brown 8 - 16' 22730 Test Pumped (Hrs.) 3.5 hr. sand Capacity (GPM) 9 Static Level 2' **Pumping Level** 15' ground Specific Capacity Diameter of Casing 4" Depth of Well (Ground) 16'6" Depth to Gravel 11 Gravel Size #1 Morie Length of Casing & Screen 16'6" Screen Material stainless steel Screen Mig. Johnsón Screen Dia. Length of Screen 15' Top of Screen Fitting Flush joint Bottom of Screen Filting flush joint car Slot Size .020 Seal Material coment & bentonit Quantity 1 bag cement Depth of Seal Material 1' **Dritting Machine** 



### New Jersey Department of Environmental Protection Division of Water Resources

## MONITORING WELL RECORD

26

22881

		Atlas	Sheet Coordi	nates		
OWNER IDENTIFICATION - Owner	NUIDEP/BUR. OF SI	TE MGMT.				•
Address	428 E. STATE STRE	======================================	NJ			
City	THENTUN		State		Zip Code	
WELL LOCATION - If not the same as			er's Well No.	. MW-1	1	
County Bergen				5 Take 1		
Address Berry's Creek Lar					DOG: 110	
TYPE OF WELL (as per Well Permit Ca			Dataw		d <u>11 / 27/ 90</u>	
Regulatory Program Requiring Well						
			The worldware	1000000		
CONSULTING FIRM/FIELD SUPERVI	SOH (it applicable)			•	Tele. #	<b>F</b> C
WELL CONSTRUCTION		Depth to	Depth to	Diameter		
Total depth drilled 16.5 tt.		20.00	Bottom (ft.)	(inches)	Type and Material	Ì
Well finished toft.		[From land surface]				
Borehole diameter:	Inner Casing	. 0	1.5	4	S.S. F.J.	
<b>Top 10 i</b> n.	Outer Casing (Not Protective Casing)					
Bottom 10 in.	Screen		20.5			
Vell was finished above grade	(Note slot size)		16.5	4	S.S. F.J020	
I flush mounted	Tail Piece					
Il finished above grade, casing	Gravel Pack	1:	16.5	10	#1 Morie	
height (stick up) above land surface0ft.	Annular Seal/Grout	0	1	10	bentonite & cement	
Was steel protective casing installed?	Method of Grouting	Trenie	Pipe			
Yes No						<b>.</b> E
Static water level after drilling 2	ft.	GEO	DLOGIC LOG	(Copie:	s of other geologic logs and/or rsical logs should be attached.)	
Water level was measured using M	-Scope					
Well was developed for 3.5 hou	rs at 9 gpm		See Attac	hed		li .
Method of developmentpump		-	2.			
Was permanent pumping equipment in	stalled? 🖸 Yes 🔀 No	,				
Pump capacitygpm						
Pump type:						
Drilling Method Auger		l			Out	
Drilling Fluid None Type	of Rig CME 75					
Name of Driller John White		-180 01	п			ĺ
Health and Safety Plan submitted?	A 2	13 3	iar		- Trigoth	
Level of Protection used on site (circle of	00		45 mat		<b>(4</b> )	
N.J. License No. <u>J-0963</u>	.C. SERVICES	900	. e 610		*	
Name of Drilling Company						
I certify that I have drilled the above State rules and regulations.	-referenced well in acc	cordance with	ali well perr	nlt requirer	ments and all applicable	
Driller's Signa	ature <u>Gla </u>	White	5	D	ate 2/1/9/	
COPIES: White	& Green - DEP Canary	y - Driller 1	ink - Owner	Goldenrod	! - Health Dept.	

# W. C. SERVICES, INC.

## SINGLE CASED WELL

3C 3288/

Ť.					Coord. #	26:03:886
~			WELL LOG	FEET FROM GROUND SURFACE	NA	ME OF OWNER
U				0 to 16'6"	NJ DEP	
GROUND 4		LEVEL		3	Location Woodr.	idae. N.J.
<b>★</b> ★		LEVEL	gray sand, white sand.		Berry's	Creek Landfill
**************************************			& qray clay	0 - 16'	Well No. MW-1	1
2					State Permit	22881
			*		Job No. 22'	730
					Test Pumped (Hrs.)	3.5 hrs.
					Capacity (GPM)	9
					Static Level	2'
	÷		*		Pumping Level	15'
	·				Oalum	ground
	*	Í			Specific Capacity	
16,10"					Diameter of Casing	4"
16,6	20	20 11			Dapth of Well (Ground)	16'6"
			,		Depth to Gravel	1'
Į.,	1				Gravel Size	#1 Morie
TOTAL DEPTH			550 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -		Length of Casing & Screen	16'6"
101	·	ļ	•		Screen Material	stainless ste
					Screen Mig.	Johnson
,					Screen Dia.	4"
+					Length of Screen	15'
			•	organic	Top of Screen Fitting	flush joint
		(2 (5	5		Bottom of Screen Fitting £1:	ush joint cap
15'					Slot Size, \$	.020
/2			- N-1-4		Seal Material Cem	ent & bentonit
, ,					Quantity	1 bag cement
			2 32 320	ž,	Depth of *Seal Material	1'
		•			Drilling Machine	Auger Rig
1000	9. <b>•</b> *				Date Well Completed	11/27/90 .
					Orider John W	hite J-0963

PARSONS		Client: Rohm and Haas	Location: Wood-Ridge and Carlstat
Date Well Installed:	11/1/2010		
Well No. BWMW-1		NJBWA Permit No.	E201013862
Surface Completion: (R) (cirlce one)	oad Box Sti	ck-up	Depth Below Groundsurface (ft)
		TOC Stick-up	+
Ground Surface			0.00
Concrete		TOC Road Box	
Grout —		Top of Grout	0.50
Fine Sand Type/Size:		Top of Fine Sand	0.75
DICED		Top of Sand Pack	1.00
RISER — 2"  Diameter: 2"  Material: PVC		Top of screen	1.45
Sand Pack Type:		WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
		Bottom of Screen	10.95
SUMP —		Bottom of Sump	11.45
		Bottom of Borehole	12.50
•	6 inches	Top of Confining Unit (if pres	sent):

	WE	ELL	DE	<b>VELC</b>	<b>PM</b>	IENT	RE	POR	RT		
PARSONS			CLIEN	T: Rohm and	l Haas		WEL	.L #:	BWMW-1		
PROJECT : LOCATION:	Ventror Wood F							ATE: ECT NO.	11/1/2010		_,
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow S Whale Po	ump	down,retu	ırn	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMEN EVELOPMENT	IT DATE			11/1/2010 11/1/2010	- - - -
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		3.11 2 6	in	MEASU SILT TH	LED POW DEP RED POW DEF IICKNESS: FTER DEVELO	РТН(ТО	C):	11.45 11.3 0.15 11.45		_ft _ft _ft _ft
DIAMETER FAC	TORS (C	SAL/FT	):		-11						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	IN ANNU W SEAL(f	LAR SPA	ACE = RING DIA E = A + B D = 5 X (	AM. FACTOR =	- WELL [		X 0.3		1.4 1.2 2.6 12.9 G	GAL. = A  GAL. = B  GAL. = C  GALS.	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDUCTIVITY	TEMP	COLOR	ОТН	ER	
Pump Surge Pump			30 15 30	20							
Surge			5	10							
Pump Final			30	10	7.77	1.67		clear			
									Т	urbidity	
TOTALS/FINAL COMMENTS:				40 Gals	7.77	1.67				3 ntus	
· · · · · · · · · · · · · · · · · ·											

RSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat
Well Installed: 11/2/2010  No. BWMW-2	NJBWA Permit No.	E201013869
ce Completion: Road Box Stick-u	ıb )	Depth Below Groundsurface (ft)
e one)	TOC Stick-up	+ 3.00
nd Surface		0.00
ete	TOC Road Box	
	Top of Grout	0.60
Sand ————————————————————————————————————	Top of Fine Sand	1.00
~	Top of Sand Pack	1.50
eter: 2" ial: PVC	Top of screen	2.03
Pack	WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
	Bottom of Screen	11.53
P	Bottom of Sump	11.93
	Bottom of Borehole	12.50
8 inches		sent):

	WE	LL	DE	EVELO	<b>PM</b>	IENT	RE	POF	RT		
PARSONS			CLIEN	IT: Rohm and	Haas		WEL	L #:	BWMW-2		
PROJECT : LOCATION:	Ventron Wood R			l				ATE: ECT NO.	11/1/2010		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow St Whale Pu Surge Blo	ımp			START	INSPECTOR: CONTRACTOR CREW: DEVELOPMEN VELOPMENT I	IT DATE			11/5/2010 11/5/2010	- - - -
WATER DEPTH (TOC): WELL DIA. (ID CASING) BORING DIAMETER:	):		3.31 2 6	in	MEASUI SILT TH	LED POW DEP RED POW DEF ICKNESS: FTER DEVELO	DEPTH(TOC): - 1				
DIAMETER FAC	TORS (G	AL/FT)	):		JI						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	IN ANNUL W SEAL(ft WATER V	_AR SPA i) X (BOF /OLUME :MOVED	CE = RING DIA = A + B = 5 X	AM. FACTOR  =  C	- WELL [		) X 0.3 :		1.4 1.3 2.7 13.5 G	GAL. = A  GAL. = B  GAL. = C	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDUCTIVITY	TEMP	COLOR	ОТН	ER	
Pump Surge Pump	7:30		30 15 20								
Surge		0.00	10								
Pump Final		9:00	15	10	7.77	1.67		clear			
									TDS T	urbidity	
TOTALS/FINAL COMMENTS:				25 Gals	6.28	1.73			0.87 5	0ntus	

PARSONS		Client: Rohm and Haas	Location: Wood-Ridge and Carlsta
Date Well Installed: 1 Well No. BWMW-3	1/9/2010	NJBWA Permit No.	E201013884
Surface Completion: Road E	Box Sti	ick-up	Depth Below Groundsurface (ft)
(cirlce one)		TOC Stick-up	+ 3.00
Ground Surface			0.00
Concrete		TOC Road Box	
Grout —		Top of Grout	0.00
Fine Sand Type/Size:		Top of Fine Sand	6.00
RISER — /////		Top of Sand Pack	6.00
Diameter: 2" Material: PVC		Top of screen	8.00
Sand Pack Type:		WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
_		Bottom of Screen	18.00
SUMP —		Bottom of Sump	18.00
		Bottom of Borehole	18.00
_	8 inches	Top of Confining Unit (if pres	ent):

	WE	ELL	DE	EVEL	OPN	<b>1ENT</b>	RE	POF	RT			
PARSONS			CLIEN	IT: Rohm and	l Haas		WEL	L #:	BWMW-3			
PROJECT : LOCATION:		tron Velsicol OU-1 od Ridge NJ						ATE: ECT NO.	11/19/2010 445800		_	
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:					START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	SG:	Lynch 11/9/2010 11/9/2010			
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	DIA. (ID CASING): 2 in MEASURED POW							W DEPTH(TOC): - S: -				
DIAMETER FAC	TORS (G	SAL/FT	·):		<u> </u>							
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870			
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	IN ANNUI DW SEAL(fi	_ar sp./ t) X (Boi	ACE = RING DIA E = A + B	AM. FACTOR	- WELL [		R) X 0.3 =		2.2 1.0 3.2 16.1 G	GAL. = A  GAL. = B  GAL. = C  ALS.		
	START	END	ELAPSED	GALLONS								
ACTIVITY	TIME	TIME	TIME	REMOVED	рН	CONDUCTIVITY	TEMP	COLOR	OTHE	R		
Pump	12:02		5									
Surge			20	17								
Pump			3									
Surge			16	13								
Final					7.77	1.67		clear				
			-									
									TD0 -	1 * 10.		
TOTAL C/FINAL				20 Cala	E 04	4.00				urbidity		
TOTALS/FINAL  COMMENTS:			<u> </u>	30 Gals	5.94	1.69			0.84 8	unius		

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat
Date Well Installed: 11/4/2010		
Well No. BWMW-4	NJBWA Permit No.	E20101885
	k-up	Depth Below Groundsurface (ft)
(cirlce one)	TOC Stick-up	+ 3.00
Ground Surface		0.00
Concrete	TOC Road Box	
Grout	Top of Grout	0.50
Fine Sand Type/Size:	Top of Fine Sand	1.00
	Top of Sand Pack	2.00
RISER Diameter: Material:	Top of screen	4.24
Sand Pack Type:	WELL SCREEN: Diameter: 2" Slot Size: 10 Material: PVC	
	Bottom of Screen	14.24
SUMP —	Bottom of Sump	14.74
	Bottom of Borehole	15.00
6 inches	Top of Confining Unit (if pres	sent): -

	WE	LL	DE	VELC	<b>DPM</b>	IENT	REI	POF	RT		
PARSONS			CLIEN	T: Rohm and	d Haas		WEL	L #:	BWMW-4		
PROJECT : LOCATION:	Ventror Wood F							ATE: ECT NO.	11/4/2010		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow S Whale Pu Surge Blo 11/4/	ump ock / Wh		0	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	SG: T. L	urek S North America Lynch 22.10 22.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING) BORING DIAMETER:	ı:		7.34	in	MEASU SILT TH	LED POW DEF RED POW DEF IICKNESS: FTER DEVELO	PTH(TO	C):	17.74 - - 17.74		ft ft ft ft
DIAMETER FAC	TORS (C	SAL/FT	):		<u> II                                  </u>						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 ) 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELO SINGLE STANDING MINIMUM VOLUME	IN ANNUI W SEAL(f	LAR SPA t) X (BOI	ACE = RING DIA E = A + B	AM. FACTOR	- WELL [		?) X 0.3 =		1.7 5.4 7.1 35.4 (	GAL. = A  GAL. = B  GAL. = C  GALS.	
ACTIVITY	START TIME	END TIME	ELAPSED TIME	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	OTH	IER	
									TDS	Furbidity	
TOTALS/FINAL				60 Gals	6.44	1.62			0.81 ppt 3	300 ntus	
COMMENTS:						<u> </u>					

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/12/20	010	
Well No. BWMW-5	NJBWA Permit No.	E20103886
Surface Completion: Road Box (cirlce one)	Stick-up	Depth Below Groundsurface (ft)
cince one)	TOC Stick-up	+ 2.50
Ground Surface		0.00
Concrete	TOC Road Box	
Grout -	Top of Grout	0.00
Fine Sand ————————————————————————————————————	Top of Fine Sand	0.25
	Top of Sand Pack	0.25
RISER — 2" Diameter: 2" Material: PVC	Top of screen	1.10
Sand Pack Type:	WELL SCREEN: Diameter: 2" Slot Size: .20 Material: PVC	
	Bottom of Screen	11.10
SUMP ————————————————————————————————————	Bottom of Sump	11.60
	Bottom of Borehole	12.00

	WE	ELL	DE	<b>EVEL</b> (	<b>OPM</b>	IENT	REI	POF	RT		
PARSONS			CLIEN	NT: Rohm and	d Haas		WEL	L #:	BWMW-5		
PROJECT : LOCATION:	Ventron Wood Ri							ATE: ECT NO.	11/12/2010		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow Ste Whale Pur Surge Blo 11/12/201	mp ck / Wha			START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT: VELOPMENT	IT DATE	SG: T. L : 11.2	s North America Lynch 22.10		- - - -
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		8.08 2 6	in	MEASU SILT TH	LED POW DEF RED POW DEF IICKNESS: FTER DEVELO	PTH(TO	C):	15.87 15.87 - 15.87		_ft _ft _ft _ft
DIAMETER FAC DIAMETER (IN): GALLONS/ FT:	2 0.163	<b>AL/FT)</b> 3 0.367	4	5 6 1.020 1.470	7	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	IN ANNUL OW SEAL(ft)	AR SPAC X (BOR	CE = ING DIA = A + B =	M. FACTOR - =	· WELL DI		X 0.3 =		1.3 5.9 7.2 36.0 G	GAL. = A  GAL. = B  GAL. = C  GALS.	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	pH	CONDUCTIVITY	TEMP	COLOR	OTHE		
TOTALS/FINAL				60 Gals	6.24	1.16				urbidity 80 ntus	
COMMENTS:											

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/10/20	10	
Well No. BWMW-6	NJBWA Permit No.	E20103870
	Stick-up	Depth Below Groundsurface (ft)
cirlce one)	TOC Stick-up	+ 3.00
Ground Surface		0.00
Concrete	TOC Road Box	
Grout —	Top of Grout	0.00
Fine Sand Type/Size:	Top of Fine Sand	0.70
	Top of Sand Pack	0.70
RISER — Diameter: Material:	Top of screen	1.70
Sand Pack Type:	WELL SCREEN: Diameter: 2" Slot Size: .20 Material: PVC	
	Bottom of Screen	11.70
SUMP —	Bottom of Sump	12.00
	Bottom of Borehole	12.00
8 inches	Top of Confining Unit (if pre	sent):

	WE	ELL	DE	EVELO	<b>DPN</b>	IENT	REI	POF	RT		
PARSONS			CLIEN	IT: Rohm and	l Haas		WEL	L #:	BWMW-6		
PROJECT : LOCATION:	Ventron Wood R							ATE: ECT NO.	11/12/2010		
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow Ste Whale Pu Surge Blo 11/10/201	mp ck / Wha			START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	T. L	S North America Lynch 22.10 22.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		5.65 2 8	in	MEASU SILT TH	LED POW DEF RED POW DEF HICKNESS: FTER DEVELO	PTH(TO	C):	14.63 14.63 - 14.63		ft ft ft ft
DIAMETER FAC	TORS (G	AL/FT)	:		<u>"</u>						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM	IN ANNUL	AR SPA	CE =						1.5	GAL. = A	
WATER COL. BELC					WELL D	IAM. FACTOR)	X 0.3 =		4.1	GAL. = B	
SINGLE STANDING									5.6 28.1 C	GAL. = C GALS.	
ACTIVITY	START TIME	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDUCTIVITY	TEMP	COLOR	ОТН	ER	
									TDS 1	Furbidity	
TOTALS/FINAL	<u> </u>			60 Gals	6.2	1.28			0.63 ppt 1	120 ntus	
COMMENTS:											

Location: Wood-Ridge and **PARSONS** Client: Rohm and Haas Carlstat, NJ Date Well Installed: 11/5/2010 Well No. BWMW-7 NJBWA Permit No. E201013877 Depth Below Surface Completion: Road Box Groundsurface (ft) Stick-up (cirlce one) TOC Stick-up 0.0 **Ground Surface** Concrete TOC Road Box Top of Grout 0.2 Grout Fine Sand Top of Fine Sand 0.7 Type/Size: Top of Sand Pack 0.7 RISER Diameter: Material: Top of screen 1.7 Sand Pack Type: WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC Bottom of Screen 11.7 SUMP · Bottom of Sump 12.0 Bottom of Borehole 12.0 8 inches Top of Confining Unit (if present):

	WE	LL	DE	EVELC	PN	IENT	REI	POF	RT		
PARSONS			CLIEN	IT: Rohm and	Haas		WEL	L #:	BWMW-7		
PROJECT : LOCATION:	Ventron Wood Ri							ATE: ECT NO.	11.16.10		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow Ste Whale Pur surge bloc 11/5/2010	np k			START	INSPECTOR: CONTRACTOR CREW: DEVELOPMEN	IT DATE	G. I	urek S North America Pyjack 16.10 16.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING) BORING DIAMETER:	DIA. (ID CASING): 2 in MEASURED POW I							C):	11.4 11.4 - 11.4		ft ft ft ft
DIAMETER FAC	TORS (G	AL/FT):	1								
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELO SINGLE STANDING MINIMUM VOLUME	IN ANNULA W SEAL(ft) WATER VO	AR SPAC X (BORI DLUME =	CE = ING DIA = A + B =	M. FACTOR - '	WELL DI		X 0.3 =		1.5 1.5 3.0 15.0	GAL. = B	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	ОТ	HER	
Surge Pump Surge	8:02		7 7 2	10							
Pump		8:30	12	25							
		0.00									
									TDS	Turbidity	
TOTALS/FINAL  COMMENTS:	<u> </u>		28	35 Gals	6.14	1.06			0.51 ppt	70 NTUs	

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/5/2010		
Well No. BWMW-8	NJBWA Permit No.	E20103878
Surface Completion: Road Box (cirlce one)	-up	Depth Below Groundsurface (ft)
(cince one)	TOC Stick-up	+
Ground Surface		0.0
Concrete	TOC Road Box	
Grout —	Top of Grout	0.2
Fine Sand Type/Size:	Top of Fine Sand	0.5
RISER ///	Top of Sand Pack	0.7
Diameter: Material:	Top of screen	1.5
Sand Pack Type:	WELL SCREEN: Diameter: Slot Size: Material:	
	Bottom of Screen	11.5
SUMP ————————————————————————————————————	Bottom of Sump	11.7
	Bottom of Borehole	12.0
8 inches		
	Top of Confining Unit (if prese	ent):

	WE	LL	DE	EVELC	PM	IEN	T	RE	POF	RT			
PARSONS			CLIEN	IT: Rohm and	Haas			WEL	L #:	BWMW-8			
PROJECT : LOCATION:	Ventron Wood Ri								ATE: ECT NO.	11.16.10	300		
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow Ste Whale Pur surge bloc 11/5/2010	np k					ACTOF DPMEN	IT DATE	SG. I G. I	rek S North Amer Pyjack 16.10	ica		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		1.49 2 6	in	INSTALI MEASUI SILT TH POW AF	RED PC	W DEF SS:	PTH(TO(	C):	1:	2.1 2.1 - 2.1		ft ft ft ft
DIAMETER FAC DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4	5 6 1.020 1.470	7 2.000	8 2.610	9 3.300	10 4.080	11 4.930	12 5.870			
STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	OW SEAL(ft)	X (BORI	NG DIA = A + B =	=	WELL DI					:		GAL. = B GAL. = C	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDUC	CTIVITY	TEMP	COLOR		OTHER		
Surge Pump	8:38	8:59	19										
TOTALS/FINAL COMMENTS:			21	35 Gals	6.29		0.48			TDS 0.70 ppt		rbidity NTUs	

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/5/2010		
Well No. BWPZ-1	NJBWA Permit No.	E201013887
Surface Completion: Road Box Stice (cirlce one)	ck-up	Depth Below Groundsurface (ft)
(cince the)	TOC Stick-up	+
Ground Surface		0.0
Concrete	TOC Road Box	
Grout	Top of Grout	0.3
Fine Sand ————————————————————————————————————	Top of Fine Sand	0.7
RISER —	Top of Sand Pack	1,0
Diameter: Material:	Top of screen	1.4
Sand Pack Type:	WELL SCREEN: Diameter: 4" Slot Size: 0.20 Material: Stainless Steel	
SUMP —	Bottom of Screen  Bottom of Sump	11.4 11.7
	Bottom of Borehole	12.0
10 inches		
	Top of Confining Unit (if prese	ent):

	WE	ELL	DE	EVELO	<b>OPN</b>	IENT	RE	POF	RT		
PARSONS			CLIEN	IT: Rohm and	Haas		WEL	L #:	BWPZ-1		
PROJECT : LOCATION:	Ventror Wood F			1				ATE: ECT NO.	11/24/2010		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow S Whale Pe Surge Bl	ump	ale Pum	p	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	T. L	rek S North America Lynch 22.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		1.89 4 10	in	MEASU SILT TH	LED POW DEF RED POW DEF IICKNESS: FTER DEVELO	PTH(TO	C):	11.31 10.5 0.81 11.31		ft ft ft ft
DIAMETER FAC	TORS (C	SAL/FT	·):		<u>II.</u>						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING	IN ANNU	LAR SPA t) X (BO	ACE = RING DIA	AM. FACTOR	- WELL I		R) X 0.3 =		6.2 1.9 8.1	GAL. = A  GAL. = B  GAL. = C	
MINIMUM VOLUME	TO BE RI	EMOVED	O = 5 X	C					40.5	GALS.	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDUCTIVITY	TEMP	COLOR	ОТН	HER	
	<u> </u>										
									TDS	Turbidity	
TOTALS/FINAL				60 Gals	6.9	1.01				60 ntus	
COMMENTS:	•			•	•		•				

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/2/2010	NIBWA B. CO	
Well No. BWPZ-2	NJBWA Permit No.	E201013872
Surface Completion: Road Box Stick-(cirlce one)	-ир	Depth Below Groundsurface (ft)
(emec 6.16)	TOC Stick-up	+
Ground Surface		0.00
Concrete	TOC Road Box	
Grout	Top of Grout	0.20
Fine Sand Type/Size:	Top of Fine Sand	1.00
	Top of Sand Pack	1.00
RISER Diameter: 4in. Material: pvc	Top of screen	1.70
Sand Pack Type:	WELL SCREEN: Diameter: 4" Slot Size: 0.20 Material: Stainless Steel	
	Bottom of Screen	10.04
SUMP —	Bottom of Sump	12.00
	Bottom of Borehole	12.00
10 inches	Top of Confining Unit (if prese	-A).

	WE	ELL	DE	EVELO	<b>OPN</b>	<b>1ENT</b>	RE	POF	RT		
PARSONS			CLIEN	IT: Rohm and	Haas		WEL	L #:	BWPZ-2		
PROJECT : LOCATION:	Ventror Wood F			1				ATE: ECT NO.	11/24/2010		<u> </u>
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow S Whale Po Surge Blo	ump	ale Pum	р	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	T. L	S North America ynch 22.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		2.09 4 10	in	MEASU SILT TH	LED POW DEP RED POW DEF IICKNESS: FTER DEVELO	PTH(TO	C):	10.04 10.04 - 10.04		_ft _ft _ft _ft
DIAMETER FAC	TORS (C	SAL/FT	<b>)</b> :		<u>II</u>						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC	IN ANNU	LAR SPA	ACE =					=	5.2	GAL. = A	
SINGLE STANDING									7.3	GAL. = C GALS.	
ACTIVITY	START TIME	END TIME	ELAPSED TIME	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	OTH	IER	
									TDS	Turbidity	
TOTALS/FINAL				60 Gals	6.56	1.4				90 ntus	
COMMENTS:											

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/3/2010		
Well No. <b>BWPZ-3</b>	NJBWA Permit No.	E 201013887
Surface Completion: Road Box (cirlce one)	Stick-up	Depth Below Groundsurface (ft)
	TOC Stick-up	+
Ground Surface		0.00
Concrete	TOC Road Box	
Grout —	Top of Grout	0.40
Fine Sand  Type/Size:	Top of Fine Sand	1.40
, ypo/6/2c.	Top of Sand Pack	1.40
RISER ————————————————————————————————————		
Sand Pack	Top of screen	2.18
Type:	WELL SCREEN: Diameter: 4" Slot Size: 0.20 Material: Stainless	
	Bottom of Screen	11.68
SUMP —	Bottom of Sump	12.18
		14.00

	WE	ELL	DE	EVELO	<b>OPN</b>	IENT	RE	POF	RT		
PARSONS			CLIEN	IT: Rohm and	Haas		WEL	L #:	BWPZ-3		
PROJECT : LOCATION:	Ventror Wood F			1				ATE: ECT NO.	11/24/2010		<u> </u>
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow S Whale Pt Surge Blo	ump	ale Pum	p	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	T. L	S North America synch 22.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		1.99 4 10	in	MEASU SILT TH	LED POW DEF RED POW DEF IICKNESS: FTER DEVELO	PTH(TO	C):	12.18 12.18 - 12.18		ft ft ft ft
DIAMETER FAC	TORS (C	SAL/FT	·):		<u>                                     </u>						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING	IN ANNU	LAR SPA t) X (BO	ACE = RING DI	AM. FACTOR	- WELL I		R) X 0.3 =		6.7 2.0 8.7	GAL. = A  GAL. = B  GAL. = C	
MINIMUM VOLUME	TO BE RE	EMOVED	O = 5 X	C					43.5	GALS.	
ACTIVITY	START	END TIME	ELAPSED	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	OTH	IER	
									TDS	Turbidity	
TOTALS/FINAL				60 Gals	6.57	0.78			0.39 ppt	60 ntus	
COMMENTS:											

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/3/2010		
Well No. BWPZ-4	NJBWA Permit No.	E 201013888
Surface Completion: Road Box (cirlce one)	Stick-up	Depth Below Groundsurface (ft)
	TOC Stick-up	+
Ground Surface		0.00
Concrete	TOC Road Box	
Grout —	Top of Grout	0.30
Fine Sand  Type/Size:	Top of Fine Sand	0.60
1,000,0020.	Top of Sand Pack	0.60
RISER ————————————————————————————————————		
Sand Pack	Top of screen	1.24
Type:	WELL SCREEN: Diameter: 4" Slot Size: 0.20 Material: Stainless	
	Bottom of Screen	11.24
SUMP —	Bottom of Sump	11.74
	Bottom of Borehole	12.00

	WE	ELL	DE	EVEL	<b>OPN</b>	IENT	RE	POF	RT		
PARSONS			CLIEN	IT: Rohm and	l Haas		WEL	L #:	BWPZ-4		
PROJECT : LOCATION:	Ventror Wood F			1				ATE: ECT NO.	11/24/2010		<u> </u>
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow S Whale Po Surge Blo	ump	ale Pum	p	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	T. L	S North America Lynch 22.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		1.69 4 10	in	MEASU SILT TH	LED POW DEP RED POW DEF IICKNESS: FTER DEVELO	PTH(TO	C):	11.74 11.74 - 11.74		_ft _ft _ft _ft
DIAMETER FAC	TORS (C	SAL/FT	·):		Л						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	IN ANNUI DW SEAL(f G WATER \	LAR SPA t) X (BOI	ACE = RING DI. E = A + B	AM. FACTOR	- WELL I		2) X 0.3 =		6.6 1.7 8.3 41.5 (	GAL. = A  GAL. = B  GAL. = C  GALS.	
ACTIVITY	START	END TIME	ELAPSED	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	ОТН	ED	
										Furbidity	
TOTALS/FINAL				60 Gals	6.32	1.42			0.70 ppt 4	10 ntus	
COMMENTS:											

PARSONS		Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed:	11/10/2010		
Well No.	BWPZ-5	NJBWA Permit No.	E211013873
Surface Completion:	Road Box Stic	ck-up	Depth Below Groundsurface (ft)
(cirlce one)		TOC Stick-up	+
Ground Surface			0.0
Concrete —		TOC Road Box	
Grout —		Top of Grout	0.3
Fine SandType/Size:		Top of Fine Sand	1.0
		Top of Sand Pack	1.0
RISER — 4in.  Material: pvc		Top of screen	2.0
Sand Pack Type:		WELL SCREEN: Diameter: 4 in. Slot Size: 0.2 Material: stainless	
		Bottom of Screen	12.0
SUMP —		Bottom of Sump	12.0
		Bottom of Borehole	12.0
	10 inches	Top of Confining Unit (if pres	ent): -

	WE	ELL	DE	EVELO	<b>OPN</b>	IENT	RE	POF	RT		
PARSONS			CLIEN	IT: Rohm and	Haas		WEL	L #:	BWPZ-5		
PROJECT : LOCATION:	Ventror Wood F			1				ATE: ECT NO.	11/24/2010		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow S Whale Po Surge Blo	ump	ale Pum	p	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	T. L	S North America Lynch 23.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		1.15 4 10	in	MEASU SILT TH	LED POW DEF RED POW DEF IICKNESS: FTER DEVELO	PTH(TO(	C):	11.15 11.15 - 11.15		_ft _ft _ft _ft
DIAMETER FAC	TORS (C	SAL/FT	):		<u>II.</u>						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING	IN ANNUI DW SEAL(f G WATER \	LAR SPA t) X (BOI	ACE = RING DI. E = A + B	AM. FACTOR	- WELL [	DIAM. FACTOR	2) X 0.3 =		6.5 1.2 7.7	GAL. = A  GAL. = B  GAL. = C	
MINIMUM VOLUME	TOBER	IMOVEL	T	·					38.6 (	GALS.	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	ОТН	ER	
									TDS -	Turbidity	
TOTALS / FINAL COMMENTS:	<u> </u>		<u> </u>	60 Gals	7.17	1.02			0.50 ppt 3	30 ntus	

PARSONS		Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed:	11/6/2010		
Well No.	BWPZ-6	NJBWA Permit No.	E20101387
Surface Completion: (cirlce one)	Road Box S	Stick-up	Depth Below Groundsurface (ft)
	<u> </u>	TOC Stick-up	+
Ground Surface			0.0
Concrete —		TOC Road Box	0.0
		Top of Grout	0.3
Fine Sand Type/Size:		Top of Fine Sand	1.0
		Top of Sand Pack	1.0
RISER — 4in. Diameter: 4in. Material: pvc		Top of screen	2.0
Sand Pack Type:		WELL SCREEN: Diameter: 4in. Slot Size: 0.20 Material: stainless	
OUMP		Bottom of Screen	12.0
SUMP ————		Bottom of Sump	12.0
		Bottom of Borehole	12.0

Top of Confining Unit (if present):

	WE	ELL	DE	EVEL	OPN	IENT	RE	POF	₹T		
PARSONS			CLIEN'	T: Rohm and	d Haas		WEL	L #:	BWPZ-6		
PROJECT : LOCATION:	Ventror Wood F							ATE: ECT NO.	11/24/2010		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow S Whale Pu Surge Blo	ımp	ale Pump	)	START	INSPECTOR: CONTRACTOI CREW: DEVELOPMEN VELOPMENT	NT DATE	SG T. L : 11.:	s North America Lynch 23.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		0.29 4 12	ft in in	MEASU SILT TH	LED POW DEF RED POW DEF IICKNESS: FTER DEVELO	PTH(TO(	C):	8.12 8.12 - 8.12		ft ft ft ft
DIAMETER FAC DIAMETER (IN): GALLONS/ FT: STANDING VOLUM	2 0.163	3 0.367	4 0.654			8 9 2.610 3.300 AMETER FAC		11 4.930	12 5.870 5.1	GAL. = A	
STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	OW SEAL(f	t) X (BOI	RING DIA	=	• • • • • • •	DIAM. FACTOR			0.3 5.4 27.1 (	GAL. = B GAL. = C GALS.	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDUCTIVITY	TEMP	COLOR	ОТН	ER	
TOTALS / FINAL COMMENTS:				60 Gals	7.12	1.12				Turbidity 25 ntus	

PARSONS		Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed:	11/5/2010	_	
Well No.	BWPZ-7	NJBWA Permit No.	E201013875
Surface Completion: R (cirlce one)	oad Box Stic	k-up	Depth Below Groundsurface (ft)
(cirice one)		TOC Stick-up	+
Ground Surface			0.0
Concrete		TOC Road Box	
Grout —		Top of Grout	0.3
Fine Sand Type/Size:		Top of Fine Sand	1.0
		Top of Sand Pack	1.0
RISER  Diameter: 4 in.  Material: pvc		Top of screen	2.0
Sand Pack Type:		WELL SCREEN: Diameter: Slot Size: Material:	
SUMP —		Bottom of Screen  Bottom of Sump	12.0 12.0
		Bottom of Borehole	12.0
	12 inches	Top of Confining Unit (if pres	ent):

	WE	:LL	DE	:VEL	OPN	IENI	KE	POF	<b>२</b> ।		
PARSONS			CLIEN	T: Rohm and	d Haas		WELI	L #:	BWPZ-7		
PROJECT : LOCATION:	Ventron Wood F							ATE: ECT NO.	11/24/2010		
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Hollow S Whale Pu Surge Blo	ump	ale Pump	)	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	NT DATE	T. L	s North America Lynch 23.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		0.29 4 12	in	MEASU SILT TH	LED POW DEF RED POW DEF IICKNESS: FTER DEVELO	PTH(TOC	C):	12.2 12.2 - 12.2		ft ft ft ft
DIAMETER FAC  DIAMETER (IN): GALLONS/ FT:  STANDING VOLUM	2 0.163	3 0.367	4 0.654			8 9 2.610 3.300 AMETER FAC		11 4.930	12 5.870 7.8	GAL. = A	
STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	OW SEAL(f	t) X (BOI	RING DIA	=		DIAM. FACTOR			0.3 8.1 40.4 G	GAL. = B  GAL. = C  GALS.	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	pH	CONDUCTIVITY	TEMP	COLOR	ОТНЕ	≣R	
TOTALS / FINAL COMMENTS:				60 Gals	6.32	0.63				Turbidity 90 ntus	

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/5/201	0	
Well No. BWPZ-8	NJBWA Permit No.	E201013876
Surface Completion: Road Box (cirlce one)	ick-up	Depth Below Groundsurface (ft)
(cirice drie)	TOC Stick-up	+
Ground Surface		0.0
Concrete	TOC Road Box	
Grout —	Top of Grout	0.3
Fine Sand Type/Size:	Top of Fine Sand	0.6
	Top of Sand Pack	0.6
RISER Diameter: 4" Material: PVC	Top of screen	1.1
Sand Pack Type:	WELL SCREEN: Diameter: 4" Slot Size: 0.20 Material: Stainless	
SUMP	Bottom of Screen  Bottom of Sump	11.1 11.6
	Bottom of Borehole	12.0
12 inches		
	Top of Confining Unit (if pres	ent):

	WE	ELL	DE	EVEL	<b>OPN</b>	<b>IENT</b>	RE	POF	RT		
PARSONS			CLIEN	IT: Rohm and	l Haas		WEL	L #:	BWPZ-8		
PROJECT : LOCATION:	Ventror Wood F			1				ATE: ECT NO.	11/24/2010		
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Geoprob Whale Pu Surge Blo	ump		p	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	T. L	S North America Lynch 23.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		1.49 4 12	in	MEASU SILT TH	LED POW DEF RED POW DEF HICKNESS: FTER DEVELO	PTH(TO	C):	11.6 11.6 - 11.6		ft ft ft ft
DIAMETER FAC	TORS (C	SAL/FT	·):		11						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	IN ANNUI DW SEAL(f	LAR SPA t) X (BOI	ACE = RING DI. E = A + B	AM. FACTOR	- WELL I		2) X 0.3 =		6.6 0.9 7.5 37.4	GAL. = A  GAL. = B  GAL. = C  GALS.	
ACTIVITY	START	END TIME	ELAPSED	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	OTH	HER	
										Turbidity	
TOTALS / FINAL				60 Gals	6.23	0.68			0.34 ppt	50 ntus	
COMMENTS:											

Date Well Installed: 11/9/20 Well No. CFMW-1	10	
Well No. <b>CFMW-1</b>		
	NJBWA Permit No.	E201013889
Surface Completion: Road Box (cirlce one)	Stick-up	Depth Below Groundsurface (ft)
(cinice one)	TOC Stick-up	+ 3.00
Ground Surface		0.00
Concrete	TOC Road Box	
Grout	Top of Grout	0.00
Fine Sand Type/Size:	Top of Fine Sand	-
RISER — ////	Top of Sand Pack	0.50
Diameter: 2" Material: PVC	Top of screen	2.50
Sand Pack Type:	WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
	Bottom of Screen	12.50
SUMP —	Bottom of Sump	12.60
	Bottom of Borehole	12.60

	WE	ELL	DE	EVELO	<b>OPN</b>	IENT	RE	POF	RT		
PARSONS			CLIEN	IT: Rohm and	Haas		WEL	L #:	CFMW-1		
PROJECT : LOCATION:	Ventror Wood F			1				ATE: ECT NO.	11/24/2010		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale Po Surge Blo			p	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	G. F	S North America 2. 23.10 23.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		5 2 8	in	MEASU SILT TH	LED POW DEF RED POW DEF IICKNESS: FTER DEVELO	PTH(TO	C):	17.81 17.81 - 17.81		_ft _ft _ft _ft
DIAMETER FAC	TORS (C	SAL/FT	):		<u>                                     </u>						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING	IN ANNU	LAR SPA	ACE = RING DIA	AM. FACTOR	- WELL I		R) X 0.3 =		2.9 11.3	GAL. = A  GAL. = B  GAL. = C	
MINIMUM VOLUME	TO BE RE	EMOVED	) = 5 X	с					56.6 0	GALS.	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	ОТНЕ	ΞR	
									TDS T	Turbidity	
TOTALS / FINAL				60 Gals	6.22	1.41				75 ntus	
COMMENTS:											

PARSO	NS		Client:	Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Ins	stalled:	11/9/2010			
Well No.	CFMW-2			NJBWA Permit No.	E201013890
Surface Comp (cirlce one)	eletion: Road B	ox Stick	i-up		Depth Below Groundsurface (ft)
(cirice one)				TOC Stick-up	+ 3.00
Ground Surface					0.00
Concrete ——	<b>&gt;</b>			TOC Road Box	
Grout ——				Top of Grout	0.00
Fine Sand  — Type/Size:				Top of Fine Sand	-
DICED	<b>X</b>	<i>/////</i>		Top of Sand Pack	1.50
RISER ——— Diameter: Material:	2" PVC			Top of screen	4.40
Sand Pack - Type:				WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
				Bottom of Screen	14.40
SUMP ——				Bottom of Sump	14.60
				Bottom of Borehole	14.80
	<b>√</b>	8 inches	Т		14.8

	WE	ELL	DE	EVEL	OPN	<b>IENT</b>	RE	POF	RT		
PARSONS			CLIEN	IT: Rohm and	l Haas		WEL	L #:	CFMW-2		
PROJECT : LOCATION:	Ventror Wood F			l				ATE: ECT NO.	11/24/2010		<u> </u>
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale Pu			0	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	G. I	S North America 2. 23.10 23.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		5 2 8	in	MEASU SILT TH	LED POW DEF RED POW DEF HICKNESS: FTER DEVELO	PTH(TO	C):	18.58 18.58 - 18.58		ft ft ft ft
DIAMETER FAC					_						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC	IN ANNUI	LAR SPA	ACE =					=	8.9 2.9	GAL. = A	
SINGLE STANDING	WATER \	/OLUME	E = A + B	=					11.8	GAL. = C	
MINIMUM VOLUME	TO BE RE	EMOVED	0 = 5 X	c					59.1	GALS.	
ACTIVITY	START TIME	END TIME	ELAPSED	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	OTH	IER	
_											
TOTAL 0 / 5				00.0						Turbidity	
TOTALS / FINAL COMMENTS:	Well de	velonm	ent con	60 Gals	6.3	1.32			0.65 ppt	70 ntus	

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/9/2010	0	
Well No. <b>CFMW-3</b>	NJBWA Permit No.	E201013891
Surface Completion: Road Box Sti (cirlce one)	ick-up	Depth Below Groundsurface (ft)
(cliice one)	TOC Stick-up	+ 3.00
Ground Surface		0.00
Concrete	TOC Road Box	
Grout	Top of Grout	0.00
Fine Sand Type/Size:	Top of Fine Sand	
RISER -	Top of Sand Pack	0.80
Diameter: 2" Material: PVC	Top of screen	4.80
Sand Pack Type:	WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
SUMP	Bottom of Screen  Bottom of Sump	14.80 15.00
	Bottom of Borehole	15.20

Top of Confining Unit (if present):

	WE	ELL	DE	EVELO	<b>OPN</b>	IENT	RE	POF	RT		
PARSONS			CLIEN	IT: Rohm and	Haas		WEL	L #:	CFMW-3		
PROJECT : LOCATION:	Ventror Wood F							ATE: ECT NO.	11/24/2010		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale Pe Surge Bl			p	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	G. I	S North America 2. 23.10 23.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		5 2 8	in	MEASU SILT TH	LED POW DEF RED POW DEF IICKNESS: FTER DEVELO	PTH(TO(	C):	18.58 18.58 - 18.58		_ft _ft _ft _ft
DIAMETER FAC	TORS (C	SAL/FT	·):		<u>                                     </u>						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC	IN ANNU	LAR SP	ACE =					=	2.9	GAL. = A	
SINGLE STANDING MINIMUM VOLUME									11.8 59.1 (	GAL. = C GALS.	
ACTIVITY	START TIME	END TIME	ELAPSED TIME	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	ОТНЕ	ER	
	1										
										Γurbidity	
TOTALS / FINAL  COMMENTS:	Well de	velonm	ent cor	60 Gals	6.3	1.32			0.65 ppt 7	70 ntus	
COMMULIATO.	v v Cii u C	ACIOPII		iipiotou							

PARSO	NS	Clie	ent: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well In	stalled:	11/11/2010		
Well No.	CFMW-4		NJBWA Permit No.	E201013892
Surface Comp	oletion: Road Bo	ox Stick-up		Depth Below Groundsurface (ft)
(0)			TOC Stick-up	+ 3.00
Ground Surface	,			0.00
Concrete —	<b>&gt;</b>		TOC Road Box	
Grout ——			Top of Grout	0.00
Fine Sand — Type/Size:			Top of Fine Sand	0.50
RISER ——	<b>*</b>	WWW.	Top of Sand Pack	1.00
Diameter: Material:	2" PVC		Top of screen	2.85
Sand Pack - Type:			— WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
			Bottom of Screen	12.85
SUMP ——			Bottom of Sump	13.35
			Bottom of Borehole	13.35
		8 inches		
			Top of Confining Unit (if pres	ent):

	WE	LL	DE	<b>VELC</b>	<b>PM</b>	ENT	REF	POR	RT	
PARSONS			CLIEN.	T: Rohm and	d Haas		WEL	L #:	CFMW-4	
PROJECT : LOCATION:	Ventror Wood F		ol OU-1					ATE: ECT NO.	11/24/2010 445800	<del></del>
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale Po Surge Blo		nale Pump /2010	)	START	INSPECTOR: CONTRACTO CREW: DEVELOPMENT	R: NT DATE	G. I	S North America P. 23.10	
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		5 2 8	ft in in	MEASU SILT TH	LED POW DEF RED POW DE IICKNESS: FTER DEVELC	PTH(TO	C):	18.58 18.58 - 18.58	ft ft ft ft
DIAMETER FAC	TORS (0	SAL/FT	T):							
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870	
STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	W SEAL(f	t) X (BO	RING DIA	=	• • • • • • •	DIAM. FACTOR			<ul><li>2.9 GAL. = B</li><li>11.8 GAL. = C</li><li>59.1 GALS.</li></ul>	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDUCTIVITY	TEMP	COLOR	OTHER	
									TDS Turbidity	
TOTALS / FINAL				60 Gals	6.3	1.32	2		0.65 ppt 70 ntus	
COMMENTS:	Well de	velopm	nent com	npleted						

NJBWA Permit No.  k-up  TOC Stick-up  TOC Road Box  Top of Grout  Top of Fine Sand	Depth Below Groundsurface (ft) + 3.00 0.00
TOC Stick-up  TOC Road Box  Top of Grout	Depth Below Groundsurface (ft)  + 3.00  0.00
TOC Stick-up  TOC Road Box  Top of Grout	Groundsurface (ft) + 3.00  0.00
TOC Road Box  Top of Grout	0.00
Top of Grout	0.00
Top of Grout	
Top of Fine Sand	2.50
Top of Sand Pack	2.70
Top of screen	3.70
WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
Bottom of Screen	13.70
Bottom of Sump	14.00
Bottom of Borehole	14.00
	Top of screen  WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC  Bottom of Screen Bottom of Sump

	WI	ELL	. DI	EVEL	OPN	<b>JENT</b>	RE	PO	RT		
PARSONS			CLIEN	T: Rohm and	d Haas		WEL	L #:	CFMW-5		
PROJECT : LOCATION:	Ventron Wood R							ATE: ECT NO.	11/18/2010		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale Pu Surge Blo			)	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMENT	IT DATE	G. I	S North America 2. 23.10 23.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING) BORING DIAMETER:	):		7.7	ft in in	MEASU SILT TH	LED POW DEP RED POW DEF IICKNESS: FTER DEVELO	тн(тос	C):	17.7 17.7 - 17.7		ft ft ft ft
DIAMETER FAC	TORS (G	SAL/FT	):		<u> </u>						
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER	IN ANNUI	_AR SPA	CE =						6.5	GAL. = A	
WATER COL. BELC										-	
SINGLE STANDING				_					11.1 55.3	GAL. = C GALS.	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	ОТН	rp.	
Surge	11:15	TIME	5	REMOVED	рп	CONDUCTIVITY	TEMP	COLOR	OTH	EK	
Pump	11.13		15	20							
•				20							
Surge		44.40	3	40							
Pump		11:48	10	13							
									TDC	To sale 1-10	
TOTAL S / FINAL				22 Cala	6.00	4.04			TDS	Turbidity	
TOTALS / FINAL COMMENTS:	Well de	velopm		33 Gals	6.29	1.21			0.55 ppt	90 ntus	

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed:	1/4/2010	
Well No. CFMW-6	NJBWA Permit No.	E201013896
Surface Completion: Road Box (cirlce one)	Stick-up	Depth Below Groundsurface (ft)
(cirice dile)	TOC Stick-up	+ 3
Ground Surface		0.0
Concrete	TOC Road Box	
Grout —	Top of Grout	0.0
Fine Sand Type/Size:	Top of Fine Sand	2.2
	Top of Sand Pack	2.7
RISER Diameter: 2" Material: PVC	Top of screen	3.7
Sand Pack Type:	WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
SUMP	Bottom of Screen  Bottom of Sump	13.7 14.0
	Bottom of Borehole	14.0
	inches  Top of Confining Unit (if pre	occupt):

	WE	LL	DE	<b>VELC</b>	<b>DPM</b>	ENT	REF	POR	RT	
PARSONS			CLIEN.	T: Rohm and	d Haas		WEL	L #:	CFMW-6	
PROJECT : LOCATION:	Ventror Wood F		col OU-1					ATE: ECT NO.	11/24/2010 445800	
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale Po		nale Pump 2010	)	START	INSPECTOR: CONTRACTO CREW: DEVELOPMENT	R: NT DATE	G. : <u>11.</u>	S North America P. 23.10 23.10	
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		5 2 8	ft in in	MEASU SILT TH	LED POW DEF RED POW DE IICKNESS: FTER DEVELC	PTH(TO	C):	14 14 - 14	_ft _ft _ft _ft
DIAMETER FAC	TORS (C	GAL/F1	¯):		<u>'</u>					
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 0 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870	
STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	OW SEAL(f	t) X (BO	RING DIA	=	• • • • • • • •	DIAM. FACTOF			<ul><li>2.9 GAL. = B</li><li>8.8 GAL. = C</li><li>44.1 GALS.</li></ul>	
	START	END	ELAPSED	GALLONS					071150	
ACTIVITY	TIME	TIME	TIME	REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	OTHER	
				. <u> </u>						
				<del>.</del> I						
				<u> </u>						
				<del> </del>						
									TDS Turbidity	
TOTALS / FINAL				60 Gals	6.85	1.14			0.19 ppt 25 ntus	
COMMENTS:	Well de	velopn	nent com	npleted						

PARSONS	Clie	nt: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed:	11/12/2010		
Well No. CFMW-7		NJBWA Permit No.	E201013897
Surface Completion: Road I (cirlce one)	Box Stick-up		Depth Below Groundsurface (ft)
(		TOC Stick-up	+ 3
Ground Surface			0.0
Concrete		TOC Road Box	
Grout		Top of Grout	0.0
Fine Sand Type/Size:		Top of Fine Sand	0.5
	,,,,,,	Top of Sand Pack	1.0
RISER Diameter: 2" Material: PVC		Top of screen	4.3
Sand Pack Type:		— WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
-		Bottom of Screen	14.3
SUMP —		Bottom of Sump	14.8
		Bottom of Borehole	15.0
_	8 inches	Top of Confining Unit (if pres	ent): -

	WE	LL	DE	VELC	<b>DPM</b>	ENT	REF	POF	RT	
PARSONS			CLIEN	IT: Rohm and	d Haas		WEL	L #:	CFMW-7	
PROJECT : LOCATION:	Ventror Wood F			l				ATE: ECT NO	11/24/2010	
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale P			p	START	INSPECTOR: CONTRACTO CREW: DEVELOPMENT	OR: NT DATE	G. :: 11.	S North America	
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		5 2 8	in	MEASU SILT TH	LED POW DE RED POW DE IICKNESS: FTER DEVELO	EPTH(TO	C):	18 18 - 18	ft ft ft ft
DIAMETER FAC DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4	5 6 1.020 1.470	7 0 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870	
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	IN ANNU DW SEAL(f	LAR SP/ tt) X (BO VOLUME	ACE = RING DIA E = A + B	AM. FACTOR	R - WELL [		R) X 0.3 =		2.9 GAL. = B 11.4 GAL. = C 57.2 GALS.	
ACTIVITY	START TIME	END TIME	ELAPSED	GALLONS REMOVED	рН	CONDUCTIVITY	TEMP	COLOR	OTHER	
									TDS Turbidity	
TOTALS / FINAL				60 Gals	6.15	1.70	6		0.80 ppt 50 ntus	
COMMENTS:	Well de	velopm	nent con	npleted						

PARSONS	Client:	Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed:	1/11/2010		
Well No. CFMW-8		NJBWA Permit No.	E201013898
Surface Completion: Road Box (cirlce one)	Stick-up	>	Depth Below Groundsurface (ft)
(cince one)	<del></del>	TOC Stick-up	+ 3
Ground Surface			0.0
Concrete		TOC Road Box	
Grout		Top of Grout	1.0
Fine Sand Type/Size:		Top of Fine Sand	1.5
NIOTO VIIII	<i></i>	Top of Sand Pack	2.0
RISER  Diameter: 2"  Material: PVC		Top of screen	4.0
Sand Pack Type:		WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
		Bottom of Screen	14.0
SUMP —		Bottom of Sump	14.5
	//////////////////////////////////////	Bottom of Borehole	15.0
	8 inches		
	٦	Γορ of Confining Unit (if prese	nt):

	WE	LL	DE	VELC	<b>DPM</b>	ENT	REF	POF	RT	
PARSONS			CLIEN	IT: Rohm and	d Haas		WEL	L #:	CFMW-8	
PROJECT : LOCATION:	Ventror Wood F			1				ATE: ECT NO	11/24/2010	
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale P			p	START	INSPECTOR: CONTRACTO CREW: DEVELOPMENT	OR: ONT DATE	G. 11.	S North America	
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		5 2 8	in	MEASU SILT TH	LED POW DE RED POW DE IICKNESS: FTER DEVELO	EPTH(TO	C):	17.51 17.51 - 17.51	ft ft ft ft
DIAMETER FAC DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4	5 6 1.020 1.470	7 0 2.000	8 9 2.610 3.300	10 0 4.080	11 4.930	12 5.870	
STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	OW SEAL(1	t) X (BO	RING DIA	:=		DIAM. FACTO			2.9 GAL. = B 11.1 GAL. = C 55.6 GALS.	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDUCTIVITY	TEMP	COLOR	OTHER	
									TDS Turbidity	
TOTALS / FINAL				60 Gals	6.53	1.9	3		0.31 ppt 30 ntus	
COMMENTS:	Well de	velopm	nent con	npleted						

PARSONS		Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed:	11/11/2010	)	
Well No. CFMW	<i>1</i> -9	NJBWA Permit No.	E201013899
Surface Completion: (cirlce one)	Road Box Stic	ek-up	Depth Below Groundsurface (ft)
(onless onle)		TOC Stick-up	+ 2.5
Ground Surface			0.0
Concrete —		TOC Road Box	
Grout		Top of Grout	0.0
Fine Sand Type/Size:		Top of Fine Sand	1.0
DIOCE		Top of Sand Pack	1.5
RISER — 2" Diameter: 2" Material: PVC		Top of screen	3.7
Sand Pack ————————————————————————————————————		WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
		Bottom of Screen	13.7
SUMP ———		Bottom of Sump	14.2
		Bottom of Borehole	14.7
	8 inches		
		Top of Confining Unit (if prese	ent):

	WE	LL	DE	VELC	<b>DPM</b>	ENT	REF	POF	RT	
PARSONS			CLIEN	IT: Rohm and	d Haas		WEL	L #:	CFMW-9	
PROJECT : LOCATION:	Ventror Wood F			1				ATE: ECT NO	11/24/2010 . 445800	<del></del>
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale P Surge Bl			p	START	INSPECTOR: CONTRACTO CREW: DEVELOPMENT	OR: NT DATE	G. 11.	S North America	
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		5 2 8	in	MEASU SILT TH	LED POW DE RED POW DE IICKNESS: FTER DEVELO	EPTH(TO	C):	17.51 17.51 - 17.51	ft ft ft
DIAMETER FAC DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4	5 6 1.020 1.470	7 0 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870	
STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	OW SEAL(1	t) X (BO	RING DIA	i=		DIAM. FACTO			2.9 GAL. = B 11.1 GAL. = C 55.6 GALS.	
ACTIVITY	START	END TIME	ELAPSED	GALLONS REMOVED	рН	CONDUCTIVITY	TEMP	COLOR	OTHER	
									TDS Turbidity	
TOTALS / FINAL				60 Gals	6.53	1.9	3		0.31 ppt 30 ntus	
COMMENTS:	Well de	velopm	nent con	npleted						

PARSONS		Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed:	11/10/2010		
Well No. CFMW-1	0	NJBWA Permit No.	E201013900
Surface Completion: (cirlce one)	Road Box Stick	к-ир	Depth Below Groundsurface (ft)
(ciries cirie)		TOC Stick-up	+ 3
Ground Surface			0.0
Concrete -		TOC Road Box	
Grout —		Top of Grout	0.0
Fine Sand ————————————————————————————————————		Top of Fine Sand	0.5
RISER —	<b>X</b>	Top of Sand Pack	1.0
Diameter: 2" Material: PVC		Top of screen	4.1
Sand Pack Type:		WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
		Bottom of Screen	14.1
SUMP —		Bottom of Sump	14.5
		Bottom of Borehole	14.5
•	<u>8</u> inches	Top of Confining Unit (if pres	ent): -

	WE	ELL	DE	EVEL	OPN	<b>JENT</b>	RE	PO	RT		
PARSONS			CLIEN	T: Rohm and	d Haas		WEL	L #:	CFMW-10	)	
PROJECT : LOCATION:	Ventron Wood R							DATE:	11/24/2	010	
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale Pu			)	1	INSPECTOR CONTRACT CREW: DEVELOPMEN	OR: ENT DATI	G. 11.	S North Ame	rica	
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		8.6 2 8	in	MEASU	LED POW D JRED POW D HICKNESS: FTER DEVEL	EPTH(TO	OC):	1	7.06 7.06 - 7.06	ft ft ft
DIAMETER FAC	TORS (C	AL/FT	):								
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.30	10 0 4.080	11 4.930	12 5.870		
STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	OW SEAL(fi	t) X (BOF	RING DIA	=		DIAM. FACTO				5.0 GAL. 10.6 GAL. 52.9 GALS.	
ACTIVITY	START TIME	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDUCTIVITY	TEMP	COLOR		OTHER	
Surge	13:48	TIME	5	REMOVED	рп	CONDUCTIVITY	TEIVIP	COLOR		OTTLK	
Pump	10110	14:03		5							
Surge	7:24		10								
Pump			10	7					Ran Dry		
Surge			10								
Pump			7	3					Ran Dry		
Pump		8:25	8	3							
									TDS	Turbidit	.y
TOTALS / FINAL				18 Gals							
COMMENTS:	Well de	velopm	ent not	completed							

PARSONS		Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed:	11/10/2010	)	
Well No. CFMV	V-11	NJBWA Permit No.	E201013901
Surface Completion: (cirlce one)	Road Box Stic	ek-up	Depth Below Groundsurface (ft)
(cince one)		TOC Stick-up	+ 3
Ground Surface			0.0
Concrete —		TOC Road Box	
Grout —		Top of Grout	0.0
Fine Sand ————————————————————————————————————		Top of Fine Sand	0.2
	*	Top of Sand Pack	0.5
RISER — 2" Diameter: 2" Material: PVC		Top of screen	1.0
Sand Pack ———— Type:		WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
		Bottom of Screen	10.8
SUMP ———		Bottom of Sump	11.0
		Bottom of Borehole	11.5
	<u>8</u> inches	Top of Confining Unit (if pres	ent):

	WE	ELL	DE	EVEL	OPN	/IENT	RE	POP	RT		
PARSONS			CLIEN	IT: Rohm and	d Haas		WEL	L #:	CFMW-11		
PROJECT : LOCATION:	Ventron Wood R			I				ATE: ECT NO.	11/18/2010		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale Pu Surge Blo			p		INSPECTOR: CONTRACTO CREW: DEVELOPMENT	R: NT DATE	G. I	S North America P. 18.10 18.10		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	i):		7.3 2 8	in	MEASU SILT TH	LED POW DEI RED POW DE HICKNESS: FTER DEVELO	PTH(TO	C):	15.02 15.02 - 15.02		ft ft ft ft
DIAMETER FAC	TORS (G	SAL/FT	):								
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870		
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	R IN ANNUI DW SEAL(fi	LAR SPA t) X (BOF	ACE = RING DIA = A + B	AM. FACTOR	- WELL		R) X 0.3 =		5.0 4.3 9.3 46.7	GAL. = A  GAL. = B  GAL. = C  GALS.	
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	OTH	IER	
Surge Pump Pump	14:09	14:03 14:30		3					Ran Dry		
									TDS	Turbidity	
TOTALS / FINAL				14 Gals		1.68			0.17	140 NTUs	
COMMENTS:	Well de	velopm	ent not	completed							

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/10	/2010	
Well No. CFMW-12	NJBWA Permit No.	E201013902
Surface Completion: Road Box (cirlce one)	Stick-up	Depth Below Groundsurface (ft)
(cince one)	TOC Stick-up	+ 3.00
Ground Surface	=	0.00
Concrete	TOC Road Box	
Grout	Top of Grout	0.00
Fine Sand Type/Size:	Top of Fine Sand	0.50
RISER —	Top of Sand Pack	0.70
Diameter: 2" Material: PVC	Top of screen	1.70
Sand Pack Type:	WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
	Bottom of Screen	11.70
SUMP —	Bottom of Sump	12.00
	Bottom of Borehole	12.00

	WE	ELL	DE	EVEL	OPN	/ENT	RE	POI	RT			
PARSONS			CLIEN	T: Rohm and	d Haas		WEL	L #:	CFMW-12	2		
PROJECT : LOCATION:	Ventron Wood R							ATE: ECT NO.	11.19.10	5800		_
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale Pu Surge Blo			)		INSPECTOR: CONTRACTO CREW: DEVELOPMENT	R: NT DATE	G. I	S North Amer Pijak 19.10 19.10	rica		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	): _		6.2	in	MEASU SILT TH	LED POW DEI RED POW DE HICKNESS: FTER DEVELC	PTH(TO	C):	14	4.24 4.24 - 4.24		_ft _ft _ft _ft
DIAMETER FAC	TORS (G	AL/FT	):									
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870			
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	IN ANNUL DW SEAL(ft WATER V	AR SPA ) X (BOF  OLUME	CE = RING DIA = A + B = 5 X 0	AM. FACTOR =	- WELL I		R) X 0.3 :		,	3.6 GA	AL. = A  AL. = B  AL. = C	
ACTIVITY	START TIME	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDUCTIVITY	TEMP	COLOR		OTHER		
Surge Pump Pump	8:39		5 10 5	15								
		9:06	7	10					Ran Dry			
									TDS	Turb	idity	
TOTALS / FINAL				14 Gals		1.74				0.9 440 l		
COMMENTS:	Well dev	velopm	ent not	completed								

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/1	0/2010	
Well No. CFPZ-1	NJBWA Permit No.	E201013893
Surface Completion: Road Box (cirlce one)	Stick-up	Depth Below Groundsurface (ft)
(Cirice Orie)	TOC Stick-up	+ 3
Ground Surface		0.0
Concrete	TOC Road Box	
Grout —	Top of Grout	0.0
Fine Sand Type/Size:	Top of Fine Sand	0.5
	Top of Sand Pack	1.0
RISER Diameter: 2" Material: PVC	Top of screen	4.7
Sand Pack Type:	WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
	Bottom of Screen	14.7
SUMP —	Bottom of Sump	15.2
	Bottom of Borehole	15.2
8 in	ches	
	Top of Confining Unit (if pres	ent):

	W	ELL	DE	EVEL	OPN	/IENT	RE	POF	RT	
PARSONS			CLIEN	T: Rohm and	d Haas		WEL	L #:	CFPZ-1	
PROJECT : LOCATION:	Ventron Wood R							ATE: ECT NO.	11.19.10	
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale Pu Surge Blo			)	START	INSPECTOR: CONTRACTOR CREW: DEVELOPMEN VELOPMENT I	IT DATE:	G. F	S North America Pijak 19.10	
WATER DEPTH (TOC): WELL DIA. (ID CASING) BORING DIAMETER:	):		11 2 8	ft in in	MEASU SILT TH	LED POW DEP RED POW DEF ICKNESS: FTER DEVELOR	тн(тос		17.72 17.72 - 17.72	ft ft ft
DIAMETER FAC	TORS (G	SAL/FT	):							
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870	
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	IN ANNUI DW SEAL(fi	_AR SPA t) X (BOF /OLUME	ACE = RING DIA = A + B	AM. FACTOR	- WELL [		) X 0.3 =		6.5 G	AL. = A  AL. = B  AL. = C  S.
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	OTHER	
Surge	13:02		6	•						
Pump			10	13						
Surge			3							
Pump		13:35		22						
		10100								
									TDS Turk	oidity
TOTALS / FINAL				35 Gals	6.17	1.0			0.2 160	
COMMENTS:	Well de	velopm		completed	0.17	1.0	<u> </u>	<u> </u>	0.2 100	

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed: 11/15/2010	)	
Well No. CFPZ-2	NJBWA Permit No.	E201013894
Surface Completion: Road Box <b>Stic</b> (cirlce one)	ck-up	Depth Below Groundsurface (ft)
Cince one)	TOC Stick-up	+ 3
Ground Surface		0.0
Concrete	TOC Road Box	
Grout —	Top of Grout	2.0
Fine Sand Type/Size:	Top of Fine Sand	2.5
	Top of Sand Pack	4.0
RISER — — — — — — — — — — — — — — — — — — —	Top of screen	8.0
Sand Pack Type:	WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
	Bottom of Screen	18.0
SUMP —	Bottom of Sump	18.5
	Bottom of Borehole	20.0
<u>8</u> inches	Top of Confining Unit (if pres	ent): -

	WI	ELL	DE	EVEL	OPI	MEN.	T	RE	POF	RT			
PARSONS			CLIEN	T: Rohm and	d Haas			WEL	L #:	CFPZ-2			
PROJECT : LOCATION:	Ventron Wood R								ATE: ECT NO.	11.17.10	) 45800		
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	HAS Whale Pu Surge Blo	•		)		INSPECTO CONTRAC CREW: DEVELOP EVELOPME	CTOR	T DATE:	G. F	S North Am Pijak 17.10 7.10	nerica		
WATER DEPTH (TOC): WELL DIA. (ID CASING BORING DIAMETER:	):		7 2 8		MEASU	LED POW IRED POW HICKNESS: FTER DEV	DEP	тн(тос			21.81 21.81 - 21.81		ft ft ft ft
DIAMETER FAC	TORS (G	SAL/FT	):		<u> </u>								
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 0 2.000	8 2.610 3	9	10 4.080	11 4.930	12 5.87			
STANDING VOLUM STANDING WATER WATER COL. BELC SINGLE STANDING MINIMUM VOLUME	R IN ANNUI DW SEAL(fi G WATER \	_AR SPA t) X (BOF /OLUME	ACE = RING DIA = A + B 0 = 5 X 0	AM. FACTOR =	: - WELL		TOR)	X 0.3 =			9.7 4.1 13.8 69.0 G	GAL. = A  GAL. = B  GAL. = C  ALS.	ı
ACTIVITY	START	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDUCTIV	VITY	TEMP	COLOR		OTHER	₹	
Surge Pump Surge	9:55		5 15 4	15									
Pump		10:30	21	20									
										TDS	T	urbidity	
TOTALS / FINAL	10/-11			35 Gals									
COMMENTS:	well de	velopm	ent not	completed									

PARSONS		Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ
Date Well Installed:	11/11/2010		
Well No. CFPZ-3		NJBWA Permit No.	201013903
Surface Completion: F (cirlce one)	Road Box Stick	k-up	Depth Below Groundsurface (ft)
(66)		TOC Stick-up	+ 2.5
Ground Surface			0.0
Concrete		TOC Road Box	
Grout —		Top of Grout	5.0
Fine Sand Type/Size:		Top of Fine Sand	4.0
		Top of Sand Pack	4.0
RISER ————————————————————————————————————		Top of screen	7.3
Sand Pack Type:		——— WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC	
SUMP —		Bottom of Screen Bottom of Sump	17.3 17.8
		Bottom of Borehole	19.0
-	8 inches	Top of Confining Unit (if prese	ent):

WELL DEVELOPI							PMENI REPORT							
PARSONS CLIENT: Rohm and						Haas			WELL #: CFPZ-3					
PROJECT:	Ventron Velsicol OU-1					DATE:			ATE:	11.18.10	)			
LOCATION:	Wood F			<u>-</u>	PROJE	ECT NO.	4	445800						
DRILLING METHOD (s): PUMP METHOD (s): SURGE METHOD (s): INSTALLATION DATE:	Whale Pump Surge Block / Whale Pump 11/11/2010				INSPECTOR: CONTRACTOR: CREW: START DEVELOPMENT DATE:			T DATE:						
WATER DEPTH (TOC): WELL DIA. (ID CASING) BORING DIAMETER:	3): 2 in 8 in				INSTALLED POW DEPTH(TOC): MEASURED POW DEPTH(TOC): SILT THICKNESS: POW AFTER DEVELOPMENT:			-	21.81 21.81 - 21.81			ft ft ft ft		
DIAMETER FAC	TORS (G	SAL/FT	):		•									
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 2.610	9 3.300	10 4.080	11 4.930	12 5.87				
STANDING WATER WATER COL. BELO SINGLE STANDING MINIMUM VOLUME	W SEAL(f	t) X (BOF	RING DIA	=	- WELL [						7.9 13.4 66.8 G	GAL. = B GAL. = C		
ACTIVITY	START TIME	END TIME	ELAPSED TIME	GALLONS REMOVED	рН	CONDL	JCTIVITY	TEMP	COLOR		OTHE	R		
Surge	12:45		5		,						-			
Pump			10	15										
Surge			5											
Pump		13:25	20	20										
TOTAL 0 / 50000				0	TDS					Turbidity				
TOTALS / FINAL COMMENTS:				35 Gals	6.75	1.9		<u> </u>			0.16 6	0 NTUs		

PARSONS	Client: Rohm and Haas	Location: Wood-Ridge and Carlstat, NJ		
Date Well Installed: 11/1	2/2010			
Well No. CFPZ-4	NJBWA Permit No.	E201013904		
Surface Completion: Road Box (	Stick-up	Depth Below Groundsurface (ft)		
(cirlce one)	TOC Stick-up	+ 2.5		
Ground Surface		0.0		
Concrete	TOC Road Box			
Grout —	Top of Grout	0.0		
Fine Sand Type/Size:	Top of Fine Sand	0.3		
<b>*</b>	Top of Sand Pack	0.5		
RISER Diameter: 2" Material: PVC	Top of screen	6.1		
Sand Pack Type:	WELL SCREEN: Diameter: 2" Slot Size: 0.20 Material: PVC			
	Bottom of Screen	16.1		
SUMP —	Bottom of Sump	16.6		
	Bottom of Borehole	18.0		
8_inc	ches			
	Top of Confining Unit (if pres	sent):		

	WI	ELL	DI	EVEL	OPN	/ENT	RE	POF	RT			
PARSONS	CLIENT: Rohm and Haas						WEL	L #:	CFPZ-4			
PROJECT:	Ventron	Velsic	ol OU-1				D	ATE:	11.19.10		_	
LOCATION:	Wood Ridge NJ				PROJECT NO			ECT NO.	445800		_	
DRILLING METHOD (s):	HAS					INSPECTOR:	1	JS				
PUMP METHOD (s):	Whale Pump					CONTRACTOR	: SGS North America				_	
SURGE METHOD (s):	Surge Block / Whale Pump					CREW:	G. Pijak				_	
INSTALLATION DATE:					II -	DEVELOPMEN EVELOPMENT [	-		19.10 19.10		_	
WATER DEPTH (TOC): 11.9 ft					INSTAL	LED POW DEP	TH(TOC)	): 	20.08		ft	
WELL DIA. (ID CASING)					MEASURED POW DEPTH(TOC)			):	:ft			
BORING DIAMETER:	BORING DIAMETER: 8 i			in	SILT TH	IICKNESS:			-		ft	
					POW AF	TER DEVELOR	PMENT:		20.08		ft	
DIAMETER FAC	TORS (G	SAL/FT	):		<u> </u>							
DIAMETER (IN): GALLONS/ FT:	2 0.163	3 0.367	4 0.654	5 6 1.020 1.470	7 2.000	8 9 2.610 3.300	10 4.080	11 4.930	12 5.870			
STANDING VOLUME STANDING WATER WATER COL. BELO SINGLE STANDING MINIMUM VOLUME	IN ANNUI W SEAL(f WATER \	LAR SPA t) X (BOF	ACE = RING DIA = A + B	AM. FACTOR	- WELL [		) X 0.3 =		5.3 7.0 12.3 61.7 G	GAL. = A  GAL. = B  GAL. = C  GALS.		
	START	END	ELAPSED	GALLONS								
ACTIVITY	TIME	TIME	TIME	REMOVED	pН	CONDUCTIVITY	TEMP	COLOR	OTHE	R		
Surge	9:25		10									
Pump			4	3								
Surge			9									
Pump			4	2								
Pump w surging		11:04										
i unip w sarging		11.04	- 00	10								
									TDS T	urbidity		
TOTALS / FINAL				20 Gals	6.62	1.3				35 NTUs		
COMMENTS:		<u>-</u>	<u>-</u>						-		<u>-</u>	